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# Increasing Positive Interactions Between Staff and Individuals with Disabilities: The Impact of Training on Acquisition and Maintenance

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# INCREASING POSITIVE INTERACTIONS BETWEEN STAFF AND INDIVIDUALS WITH DISABILITIES: THE IMPACT OF TRAINING ON ACQUISITION AND MAINTENANCE

by

Kimberly Anne Martell

Abstract of a Dissertation
Submitted to the Graduate School
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ABSTRACT

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The primary purpose of the present study was to evaluate the use of direct training to increase the rate of positive interactions between direct care staff (DCS) and individuals with developmental disabilities who reside in intermediate care facilities. Specifically, this study evaluated whether real-time prompts delivered via a one-way radio would result in immediate and sustained increases in rates of DCS positive interactions. Additionally, this study evaluated the link between increased rates of DCS positive interactions and concomitant decreases in residents' challenging behaviors. A multiple baseline design across participants was implemented to assess DCS rates of positive and negative interactions. Results indicated that all participants increased their rates of positive interactions during direct training. Moreover, all but one participant continued to engage residents in positive interactions at levels above the criterion during the maintenance phase and follow-up phases. The participant who did not initially meet the criterion improved to adequate levels following one brief performance feedback session. Across phases, residents engaged in low levels of challenging behaviors, making those results difficult to evaluate. However, improvements in residents' rates of positive interactions were noted.

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# CHAPTER I

# INTRODUCTION

## Active Treatment

Federal funding agencies, such as the Medicaid Title XIX program, require the provision of an active treatment framework in intermediate care facilities for individuals with developmental disabilities (ICF-DD) (Parsons & Reid, 1993; Sturmey, 1995). Active treatment refers to the broad range of structured and unstructured training opportunities provided to individuals residing in ICF-DD facilities. An overarching goal of active treatment is to improve the lives of individuals with developmental disabilities by engaging individuals in meaningful, adaptive, and age-appropriate activities throughout the day. The active treatment framework stipulates that staff members regularly engage residents in habilitative training tasks and leisure activities, while encouraging positive interactions with peers and staff members (Reid, Parsons, Green, & Schepis, 1991).

Researchers have found that active treatment results in improved outcomes for individuals with developmental disabilities. For example, Parsons and Reid (1993) evaluated a group active treatment program that added structure to certain time periods during the day by specifying activities for those times (e.g., selection of leisure activity). The authors found increases in purposeful behavior (e.g., working independently on a habilitative task) and improved interactions between staff and residents. Additionally, the authors noted decreases in non-adaptive behavior (e.g., non-functional activities such as stereotypy). Sturmey (1995) replicated Parson and Reid's study and reported similar findings following implementation of group active treatment. Specifically, decreases in

client maladaptive behaviors (i.e., stereotypy, aggression, disruptive behaviors) were observed when group active treatment was implemented. Mansell, Elliott, Beadle-Brown, Ashman, and Macdonald (2002) compared differences in the implementation of active treatment across 13 group homes. Their findings suggested that individuals who resided in homes where active treatment was incorporated engaged in more meaningful activities and adaptive behaviors compared to homes that did not. Research findings for active treatment programs are important because individuals with developmental disabilities who possess more adaptive behaviors often exhibit fewer challenging behaviors (Kurtz, Boelter, Jarmolowicz, Chin, & Hagopian, 2011; Matson, Kiely, & Bamburg, 1997). Finally, when an active treatment framework is implemented in ICF-DD facilities, individuals with developmental disabilities are often perceived by staff to have improvements in overall quality of life (Felce et al., 2000).

## Mealtimes

Throughout the course of a typical day in an ICF-DD facility there are multiple opportunities for direct care staff (DCS) to provide active treatment to supported individuals. Mealtime is one time of day that is conducive for staff to provide active treatment. Mealtime allows opportunities for individuals with disabilities to improve adaptive skills and engage in social interactions with staff and peers. Common adaptive skills that are often the focus of intervention during mealtime include passing and serving food (Jenson et al., 1992), using utensils appropriately (Jenson et al., 1992), eating at an appropriate pace (Anglesea, Hoch, & Taylor, 2008; Favell, McGimsey, & Jones, 1980; Wright & Vollmer, 2002), reducing food spillage (Cipani, 1981), and engaging in socially appropriate interactions (Spreat et al., 1990; VanBiervliet, Spangler, & Marshal, 1981). Individuals residing in ICF-DD facilities who possess sufficient adaptive skills are

more independent and may have more normalized experiences in their living environment than those individuals with adaptive skill deficits.

Family style dining has been touted as one strategy to normalize the experiences of individuals with developmental disabilities who reside in ICF-DD facilities and is consistent with Title XIX regulations for active treatment (Jenson et al., 1992). Goals of family style dining are to increase skill acquisition (e.g., appropriate use of utensils, appropriate pace of consumption) and decrease disruptive behaviors (e.g., eating off the floor, aggression, property destruction) during meal times (Jenson et al., 1992). Despite attempts to normalize the eating environment and improve adaptive skills, individuals with developmental disabilities may still exhibit a range of challenging behaviors during mealtimes. Behaviors often observed include spilling food; eating too quickly; using the wrong utensil; eating off of the floor, table, or lap; throwing food or utensils; eating non-finger food with hands; stealing food; aggression; property destruction; self-injurious behavior; pica; rumination; or loud verbalizations (Chadwick, Jolliffe, & Goldbart, 2002; Fodstad & Matson, 2008; Jenson et al., 1992;). Some of these behaviors may be potentially dangerous (Chadwick et al., 2002; Matson, Fodstad, & Boisjoli, 2008; Matson & Kuhn, 2001). Additionally, food selectivity and food refusal, which can put individuals at nutritional risk, are often observed in individuals with developmental disabilities (Kerwin, Ahearn, Eicher, & Burd, 1995; Shore, Babbitt, Williams, Coe, & Snyder, 1998).

Given the range of challenging behaviors exhibited by individuals with developmental disabilities during mealtimes and the potential for untoward consequences, researchers have explored strategies to ameliorate these behaviors. Often, these interventions include multiple components such as differential reinforcement (e.g., reinforcing appropriate mealtime behaviors) (Cipani, 1981; Favell et al., 1980; Kahng,

Boscoe, & Byrne, 2003; Wright & Vollmer, 2002), blocking challenging behaviors (e.g., preventing the occurrence of rapid eating by physically guiding the utensil away from the mouth; Favell et al., 1980; Wright & Vollmer, 2002), reprimands following challenging behaviors (e.g., verbal reprimands for stealing food; Maglieri, DeLeon, Rodriguez-Catter, & Sevin, 2000), prompting appropriate mealtime behaviors (e.g., using a vibrating pager to encourage appropriate eating pace; Anglesea et al., 2008), environmental modifications (e.g., varying the level of noise in the environment; Spreat et al., 1990); time-out (i.e., removing food tray following spillage; Cipani, 1981), and extinction (i.e., withholding reinforcers for problem behaviors; e.g., Coe et al., 1997). For example, Favell and colleagues (1980) effectively used shaping procedures (i.e., differentially reinforcing successive approximations to a target response) that included the use of differential reinforcement of low rate responding (DRL) and prompts to decrease rapid eating in individuals. DRL includes successively reinforcing greater inter-response times (IRT) in order to decrease the rate of a behavior that is unacceptable or dangerous at high rates. Wright and Vollmer (2002) also sought to decrease rapid eating in a 17-year-old female with developmental disabilities by using DRL, response blocking, and prompts. Initially, Wright and Vollmer found the intervention resulted in negative side effects (i.e., tantrums and self-injurious behavior); however, these side-effects eventually subsided, and instances of rapid eating decreased.

Although the aforementioned interventions may help to reduce challenging mealtime behaviors, there are some concerns with these procedures. First, response blocking is reactive, includes positive punishment (i.e., application of an aversive stimulus), and may evoke negative emotional responding and aggression. Second, differential reinforcement and extinction may be resource intensive and difficult to

manage in residential settings. For example, it may be impossible to completely eliminate the reinforcers for automatically reinforced behaviors. Moreover, those procedures may require considerable training, staff effort, and monitoring for adequate staff implementation and protection of individual welfare. Finally, these interventions may not be consistent with the active treatment framework by relying on punishment-based procedures (e.g., response blocking, time-out). A more resource efficient and preventative strategy to decrease challenging behaviors while increasing adaptive behaviors during mealtimes might be to train staff to increase positive interactions with supported individuals.

## Positive Interactions

Multiple studies have evaluated the effects of positive interactions on the adaptive behavior of individuals with disabilities (Carsrud 1986; Carsrud, Carsrud, & Standifer, 1980; Chan & Yau, 2002; Dobson, Upadhyaya, & Stanley, 2002; Favell, Realon, & Sutton, 1996; Golden & Reese, 1996; Schepis & Reid, 1995). Researchers have reported that individuals with developmental disabilities are more satisfied with their lives and experience a greater sense of belonging when opportunities for social interaction are available (Jahoda, Cattermole, & Markova, 1990). Additionally, Carsrud et al. (1980) reported that when staff ignored individuals with developmental disabilities, the individuals exhibited decreases in pro-social and constructive behaviors.

In a follow-up study, Carsrud et al. (1980) evaluated the duration of social interactions and non-interactions (i.e., ignoring) between staff and residents at a developmental center. The participants consisted of 10 geriatric individuals, from two separate dormitories, who were diagnosed with intellectual disabilities. Direct observations of resident behaviors (i.e., smiling, laughing, engagement in leisure

activities, self-abuse, self-stimulation) were conducted and a modified version of the Inferred Self-Concept Scale was administered. In one dormitory, there were more non-interactions between staff and residents, a higher frequency of individuals engaging in challenging behaviors, and lower self-concept ratings. Although results were not statistically significant, Carsrud and colleagues concluded regular social interaction between individuals with intellectual disabilities and staff is essential to the well-being and self-concept of the individuals.

Multiple studies have supported the findings of Carsrud and colleagues (1980). For example, Favell and colleagues (1996) implemented a program (i.e., "Positive Environment Program") that centered on making leisure materials available, increasing social interactions between staff and residents, and training staff to provide equal attention to all residents. Resident happiness was measured by the Happiness Index. The Happiness Index is a five-point scale, which evaluates the perceived happiness (i.e., *very happy* to *very unhappy*) of residents based on smiling. Their findings suggested that social interactions improved residents' happiness with regular interactions resulting in higher degrees of happiness. Realon, Bligen, La Force, Helsel, and Goldman (2002) also used the Positive Environment Program to create a stimulating environment with access to preferred leisure materials and found positive outcomes for staff and residents. Specifically the authors observed improvements in resident alertness, increased engagement with leisure materials, and higher scores on the Happiness Index. Additionally, a positive social environment with frequent interactions between staff and residents was facilitated as well as improvements in the distribution of staff interactions across residents.

Green and Reid (1996) developed the Fun Time program to ensure that social interactions between staff and clients were positive. Staff were taught to introduce preferred items and remove items that resulted in unhappiness. Happiness and unhappiness were measured by indices that generally indicate those emotions in typically developing individuals (i.e., facial expressions and vocalizations). They found increases in happiness across all three participants during the intervention condition. These findings were replicated in other studies (e.g., Green, Gardner, & Reid, 1997; Ivancic, Barrett, Simonow, & Kimberly, 1997).

Although researchers have generally reported positive outcomes for individuals residing in ICF-DD facilities when staff regularly interact with residents, the aforementioned studies have some procedural limitations that warrant further discussion. For one, many of the studies failed to adequately describe the staff training methods used, thereby making it difficult to replicate the procedures (e.g., Favell et al., 1996; Green & Reid, 1996; Realon et al., 2002). In addition, most of the studies failed to report procedural integrity data for training procedures (Favell et al., 1996; Green & Reid, 1996; Realon et al., 2002). As a result, less is known regarding the level of training necessary for adequate implementation and beneficial treatment outcomes. Additionally, most studies have not included adequate direct measures of staff implementation (i.e., treatment integrity; Favell et al., 1996; Green & Reid, 1996; Realon et al., 2002), thereby limiting the extent to which beneficial outcomes (e.g., increases in resident happiness, engagement with leisure materials, increases in rate of interactions between staff and residents) can be attributed to the intervention and failing to identify the level of intervention implementation necessary for improved treatment outcomes.

Despite methodological limitations, researchers have generally concluded that positive interactions between staff and supported individuals have resulted in favorable outcomes. However, researchers have also found staff seldom engage supported individuals in positive interactions (Chan & Yau, 2002; Repp, Felce, & de Kock, 1987; Veit, Allen, & Chinsky, 1976). For example, Chan and Yau (2002) used the Interaction Recording System to evaluate six domains (i.e., initiator, affect, context, mand, mode of communication, and response) of interactions between staff and residents. They found that interactions between staff and residents occurred in 37.2% of the intervals observed and non-interactions occurred in 62.8% of intervals. Most often, staff initiated interactions, which centered on nursing care activities that were brief and neutral in affect (Chan & Yau, 2002). Additionally, Chan and Yau found that staff initiated more positive interactions (13.3%) than negative interactions (3.9%). Other researchers have also found that when interactions were initiated by staff, they tended to be brief (Moorse & Grant, 1976). Additionally, some researchers have found that DCS were more likely to direct commands than engage in conversation with residents (Veit et al., 1976). Researchers have also found that most interactions between staff and residents occur during structured training time as opposed to unstructured times such as mealtimes and leisure times (Daily, Allen, Chinsky, & Veit, 1974; Kuder & Bryen, 1993; Repp et al., 1987).

Multiple variables may influence the quality and frequency of interactions between staff and individuals with developmental disabilities. Characteristics of individuals with developmental disabilities and their communication abilities have been purported to influence interactions initiated by staff (Chan & Yau, 2002; Duker et al., 1989; Grant & Moores, 1977). For example, staff may interact less frequently with individuals who have physical disabilities and expressive communication deficits (Grant

& Moores, 1977). Given this concern, researchers have evaluated strategies to increase and improve interactions between staff and individuals with developmental and physical disabilities. For example, Schepis and Reid (1995) found that staff increased the frequency of interactions with an individual with profound intellectual disabilities and spastic quadriplegia when the client was trained to use an augmentative communication aid (i.e., Voice Output Communication Aid).

Some studies have specifically evaluated strategies to increase and improve the quality of staff interactions with individuals with developmental disabilities (Burg, Reid, & Lattimore, 1979; Crosland et al., 2008; Doerner, Miltenberger, & Bakken, 1989; Golden & Reese, 1996; Sack, McLean, McLean, & Spradlin, 1992). Self-management is one strategy that has been incorporated to increase interactions between DCS and residents (Burg et al., 1979; Doerner, Miltenberger, & Bakken, 1989). Burg et al. (1979) trained staff to self-monitor interactions with individuals who lived in a residential facility for adults with developmental disabilities. Staff were provided with a goal to initiate a certain number of interactions and instructed to use a self-recording card to monitor interactions. Staff were also provided with praise from supervisors for meeting the criterion. Results demonstrated increased interactions between staff and residents. Results also suggested that staff were able to interact with the residents and still fulfill all of their other work obligations. Additionally, there were slight decreases in disruptive behaviors of the residents. Results were maintained during follow-up. There are some limitations to this study that warrant discussion. First, the intervention was evaluated as a multicomponent treatment program that included self-recording, goal setting, and supervisory feedback. As a result, it is unclear which component, or combination of components, was most essential for improved staff and resident outcomes. Additionally,

procedural integrity data for self-recordings were not included, thereby raising concerns regarding internal validity. Finally, data were not included regarding residents' increased display of adaptive behaviors, which tempers judgment of intervention benefits.

Doerner et al. (1989) extended the findings of Burg et al. (1979) by comparing self-management and goal setting procedures in two separate group homes. One group home used the goal setting procedure, in which the experimenter assisted staff in setting a criterion number of positive interactions. Staff in the other home used a self-management procedure that included goal setting, self-monitoring, self-evaluation, and self-praise to increase positive interactions. Both homes reported increases in positive interactions, but the self-management procedure was slightly more effective.

Positive interactions between staff and supported individuals have been shown to result in beneficial outcomes for individuals with developmental disabilities. Additionally, staff engagement in positive interactions with supported individuals may be a resource efficient strategy to curtail challenging behaviors and improve adaptive behaviors. Although self-management procedures have been used as a strategy to increase positive interactions between staff and individuals with developmental disabilities, the procedures fail to *teach* DCS *how* to interact with individuals with disabilities. Researchers have found that DCS often do not know how to interact with individuals with disabilities (Chan & Yau, 2002; Duker et al., 1989). Additionally, the frequency of positive interactions may not dramatically improve with the addition of self-management procedures (Doerner, Miltenberger, & Bakken, 1989) and DCS have reported self-management procedures as less acceptable than other procedures such as instruction and modeling (Miltenberger, Larson, Doerner, & Orvedal, 1992). Given the

limitations of self-management procedures, alternate strategies to train DCS to increase the quality and quantity of interactions with residents in ICF-DD facilities are warranted.

## Training

DCS are on the forefront of client treatment for individuals residing in ICF-DD facilities. Typically, DCS implement multi-component treatment plans that are developed through an interdisciplinary team. Tremendous responsibility is placed on DCS to implement comprehensive and sometimes complicated treatment plans, which often require an understanding of behavior analytic procedures. However, DCS typically have low educational attainment compared to professional staff and may vary with regard to their level of experience working with individuals with developmental disabilities. The varying degrees of experience might impinge on the ability of DCS to carry out intervention plans with integrity; therefore, comprehensive training programs are warranted. Additionally, DCS are often required to work in excess of 40 hours per week for low compensation.

Researchers have evaluated various strategies to train DCS to implement interventions with integrity. Treatment integrity has been defined as the extent to which an intervention is implemented as intended (Gresham, 1989; Lane, Bocian, MacMillan, & Gresham, 2004; Mortenson & Witt, 1998). When systematic measures of integrity are included, the effectiveness of the intervention can be evaluated with more certainty. Specifically, the researcher can be more certain that the observed effects are due to the intervention. Furthermore, when systematic measures of integrity are not included, the design may be subject to threats to internal validity (Lane et al., 2004).

Researchers have incorporated various strategies to train DCS to implement interventions with integrity. Elements of training often include didactic training, video

review, role plays, modeling, performance feedback, and self-management (Arco, 2008; Burg et al., 1979; Doerner et al., 1989; Durnin & Freeman, 2005; Green, Parsons, & Reid, 1993; Guercio et al., 2005; Rosen, Yerushalmi, & Walker, 1986). Oftentimes, staff are trained via in-services, which typically incorporate multiple elements into a training package. In-service trainings may last for several weeks. For example, Rosen et al. (1986) implemented a comprehensive 40 hour training package that included the presentation of learner objectives, modeling, role playing, feedback, and social reinforcement to increase staff knowledge, improve habilitative practices, improve record keeping, and decrease staff turnover. The training program consisted of a pretest and posttest as well as direct observations of staff behavior. The researchers found improvements in habilitative programming (e.g., staff prompting, guidance, use of positive reinforcement) and decreases in staff turnover; however, given the multi-component nature of the training program, it is unclear if one component or the combination of elements was responsible for the observed improvements in staff behavior.

Sigafoos, Roberts, and Couzens (1992) also conducted in-service seminars to train staff in behavioral chaining procedures (i.e., using least-to-most prompts following a 3-second time delay, total task approaches, and use of verbal praise as reinforcement for appropriate resident behavior). One-hour in-service trainings were conducted individually with each staff. Training consisted of viewing written materials and overhead transparencies. Additionally, part of the in-service included participative management and consultation. During this portion, staff viewed a videotape and discussed how they would implement the skills taught. Staff were also asked to complete a self-monitoring checklist. Upon implementing the intervention, staff received feedback for completion of

the self-monitoring sheet. Generalization probes were included as well as follow-up data. All participants demonstrated increases in the use of time delay (i.e., waiting 3 seconds for initiation of a step before prompting) and reinforcement from baseline measures. These results were maintained during follow-up. There are some limitations that warrant discussion. For one, none of the supported individuals completely acquired the skills taught to them by staff using the chaining procedures that had been trained. The authors also noted that reactivity may have influenced the data because the staff knew that they were being observed. Finally, given that the training package included several training components, it is difficult to determine which component(s) were necessary for increasing staff skill acquisition.

Schepis and Reid (1994) trained staff to interact in group settings with an individual with severe disabilities. Training was also conducted through in-service seminars. During the in-service training, the importance of frequent positive interactions was reviewed. Additionally, staff were provided with written instructions on how to interact with supported individuals. The trainer verbally reviewed the handout, modeled the target skill, and then observed the staff during role plays. Feedback was provided to staff. Following the in-service training, which lasted approximately 60 minutes, each staff member was observed on-the-job. The trainer provided immediate or delayed feedback (two to seven days) to the staff regarding interactions for a minimum of three sessions. Following training and feedback, each of the nine participants increased the average number of interactions per minute. Specifically, the average rate of positive interactions during baseline was 2.51 statements per minute. When training and feedback were implemented, the average rate of interactions increased to 5.14 per minute. Delayed

feedback and immediate feedback were both considered effective, thus adding flexibility to this strategy.

The training procedures implemented by Schepis and Reid (1994) resulted in favorable treatment outcomes. However, there are some limitations that warrant discussion. For one, three of the participants exhibited high rates of positive interactions during baseline. Also, baseline data for one of the participants indicated an increasing trend, making it difficult to determine whether results obtained are due to the training and feedback. In addition, maintenance and follow-up data were not collected making it impossible to evaluate whether treatment gains were maintained. Another limitation of this study was that training and feedback were not individually analyzed. It is possible that training alone may have been a sufficient and efficient strategy to promote integrity. Finally, client outcome data were not reported. Therefore, the impact of increased rates of staff interactions on residents' challenging and adaptive behaviors cannot be evaluated.

Training staff through in-service seminars by incorporating a variety of components (e.g., didactic, role plays, modeling, feedback) is a commonly used strategy to increase treatment integrity (Rosen et al., 1986; Schepis & Reid, 1994; Sigafoos, Roberts, Couzens, & Caycho, 1992). However, these procedures may be time-consuming and costly, as staff coverage, trainers, and training materials must be made available. To cut back on the time and costs associated with training, researchers have explored alternate procedures. One strategy that has been used is scripted interactions. Sack and colleagues (1992) trained staff by providing scripted activities to increase communication between staff and five adolescents with severe to profound intellectual disabilities who resided in a state-operated facility. Staff were trained to use the scripts, and also trained to recognize nonverbal communication during a one-hour training session. Videotaped

demonstrations were incorporated to supplement didactic training. Following training, the experimenter supervised staff on implementing the procedure during art activity and snack. Data were not collected during these observations. The authors reported that the scripted activities increased scheduled opportunities for staff to interact with residents. Additionally, scripted activities resulted in increased interactions between staff and residents and also increased the likelihood that residents would initiate communication with staff. Although the scripts were judged effective, procedural integrity data for staff implementation of the scripted activities were not reported, thereby limiting confidence in the conclusions. Additionally, the use of the scripts may limit generalization. Staff may become dependent on the scripts, limiting their spontaneous interactions with the residents during unscripted times.

The use of video training is another strategy that has been evaluated to improve the feasibility of staff training procedures. Macurik, O'Kane, Malanga, and Reid (2008) evaluated the effectiveness, efficiency, and acceptability of video training compared to live training to train staff to implement individual behavior plans. During the live training sessions, staff received didactic training and completed a quiz related to the behavior plan. During video training, staff viewed a video of the experimenter describing the intervention and then took a quiz. The video cost $100 to produce and required from four to five hours per plan to create. There were no consistent differences in quiz scores across the two training procedures. Staff reported to find both procedures acceptable. The researchers concluded that video training was superior although there were no differences in quiz scores, and it was more expensive and resource intensive than live training. Additionally, the researchers relied on quizzes as a measure of skill acquisition. There were no direct measures of treatment integrity. Although the use of training videos

has received some support, it is not necessarily a more efficient or effective strategy to train staff to implement interventions. Additionally, this method does not allow staff the opportunity to practice the skills in a real-world setting.

*In vivo* training, that is, training staff under naturalistic conditions, may also be an effective strategy to promote treatment integrity that is more resource efficient than the aforementioned training procedures. Green et al. (1993) trained staff to integrate teaching strategies into group leisure time via *in vivo* training. Staff first attended a brief in-service meeting that lasted approximately 20 minutes. Within two weeks of the in-service, the experimenter and team psychologist met with the staff members individually during group leisure time. One trainer modeled the teaching skills with the resident, while the other described the teaching procedures and demonstrated completion of paperwork. The staff member was responsible for recording the occurrence of prompting and contingent reinforcement. Following the training session, the experimenter or psychologist observed the staff member, and both completed a self-management data sheet. Staff were provided with written and verbal feedback based on the completion of the self-management data sheets. The researchers concluded that staff increased the use of the integrated teaching management program; however, there are several limitations that should be noted. During this study, two trainers were required for the *in vivo* training. Although these procedures were feasible given that only two staff were being trained, they may not be conducive to training large numbers of employees. Also, the small number of participants in this study (i.e., two), may limit external validity. Additionally, there was a potential confound during training in which the staff were provided with an expanded list of clients' target skills. It is conceivable that staff improved teaching skills because they knew what to teach, not necessarily because of the training program. In addition, for one participant,

there was an increasing trend during baseline, thereby limiting the conclusions that can be made. Follow-up data were not included; thus, it is impossible to conclude whether results were maintained over time. Also, the researchers did not include client outcome data; therefore, it is also impossible to determine whether the intervention resulted in meaningful changes for the supported individuals.

In a four-part study, Parsons, Reid, and Green (1993) evaluated the Teaching-Skills Training Program (TSTP) as a training procedure for new staff who were employed in a large residential center serving individuals with developmental disabilities. The TSTP emphasized training staff to use basic teaching skills that were necessary for implementation of resident support plans. Parsons et al. classified basic teaching skills as either verbal skills (i.e., using behavioral terminology) or performance skills (i.e., teaching resident skills in the correct order, using prompts, reinforcement, and error correction). The TSTP included four two-hour classroom-based training sessions, as well as *in vivo* observations and feedback. During classroom instruction, staff completed a pre-test with questions related to the skills that would be taught. Staff then received instruction using a commercially packaged training procedure that included videotapes and practice activities. Staff obtained feedback on their performance during class activities. Staff then completed a posttest. Staff were required to meet a criterion of 80% correct and repeated the test until they earned an acceptable score. During the *in vivo* training component, an observer recorded whether the staff participant correctly demonstrated the skills.

In Study 1, Parsons et al. (1993) evaluated the participants' use of verbal skills following training using the TSTP. Acquisition of verbal skills was measured by reviewing scores on a pre-and posttest. The authors found increases in the average scores

across three groups of participants; however, individual scores were not reported. Therefore, it is possible that only some participants improved their scores. Additionally, it is unclear if some participants were administered the quiz multiple times to reach the 80% criterion. In Study 2, Parsons et al. (1993) evaluated the effects of the TSTP on the performance skills of DCS (n = 5) and supervisory staff (n = 4). The authors reported improvements in DCS performance from pre-training observations to posttraining observations. However, for each DCS, only one observation was conducted during pretraining, whereas posttraining reflected the average treatment integrity score across several observations. The four supervisors also improved their performance scores following the TSTP; however, one participant had an increasing trend during baseline, thereby limiting the conclusions that can be made. In Study 3, Parson et al. (1993) evaluated whether residents' adaptive skills (e.g., folding a shirt, wiping a mouth with a napkin, using a cassette recorder) improved when staff used teaching procedures with integrity. The authors noted that when staff incorporated the training procedures, clients demonstrated increased skill acquisition with regard to adaptive behaviors. Finally, in Study 4, all participants rated the TSTP as an acceptable training procedure.

Although the outcomes of Parson et al.'s (1993) study using the TSTP are generally favorable, there are some limitations that warrant discussion. For one, the TSTP is a multicomponent training package that included didactic training, *in vivo* observations, and feedback. Given the nature of the training package, it is unclear which component(s) are necessary for staff to implement the procedures with integrity. In addition, the authors relied on pre-and posttest measures to evaluate participants' knowledge of behavioral terminology (i.e., verbal skills). There was not a direct measure of whether participants utilized behavioral terminology to communicate while working in

the natural context. This is potentially an important skill because treatment plans in ICF-DD facilities are often laden with behavioral jargon that DCS would need to decipher to accurately implement the residents' support plan. Additionally, approximately 10 hours of training were required for each individual, which may not be feasible when training multiple employees. Also, the authors did not include follow-up data. Therefore, the extent to which staff and client outcomes were maintained is unknown. Finally, although the authors reported using *in vivo* training, this component served primarily as an observation period to ensure that staff were employing skills acquired during classroom training. A majority of the staff training procedures were actually conducted in a classroom setting, which did not allow for practice in implementing the training objectives directly with the residents. It is possible that all training could occur on-site, thereby alleviating the need for a classroom-based training component and potentially increasing the feasibility of training procedures.

Dufrene et al. (2012) evaluated direct training procedures to increase Head Start teachers' use of praise and effective instruction delivery. Although previous studies included *in vivo* components, Dufrene et al. delivered real-time prompts via a one-way radio in the natural environment. This study also included a follow-up phase to assess the extent to which treatment gains were maintained. Additionally, the corresponding changes in child disruptive behaviors were recorded.

Treatment consisted of didactic training first, followed by direct training during routine classroom activities. During the didactic training phase, teachers received verbal instruction for the rationale and use of praise and effective instruction delivery (EID) (Ford, Olmi, Edwards, & Tingstrom, 2001) during a brief meeting with a consultant. Teachers had the opportunity to practice delivering praise in an analog setting with the

consultant while no children were present. The consultant provided brief feedback to the teacher. This phase was similar to the in-service trainings that DCS in institutional settings attended in the previously described studies. During the direct training phase, teachers received real-time verbal prompts to praise children during instruction and to issue instructions using EID. Prompts were delivered using a one-way radio.

Dufrene et al. (2012) found that didactic training did not result in substantial changes in teachers' use of praise. However, direct training resulted in greater rates of teacher praise statements and increased accuracy for EID. Additionally, decreases in the rates of children's disruptive behaviors (i.e., noncompliance, yelling, out-of-area, and aggression) were observed following increased teacher praise and EID. Moreover, teachers maintained increased praise and effective instruction delivery for approximately six weeks after the final direct training session. The primary limitation of this study is related to the potential for sequence effects since all teachers received didactic procedures prior to direct training. Additionally, this study was conducted in a school-based context. It is unknown whether similar findings would be observed if these procedures were used to train DCS who work primarily in institutional settings with individuals who have developmental disabilities. However, these training procedures, if effective, can address some limitations of the training literature that has evaluated procedures to train DCS.

## Summary and Purpose of the Current Study

In summary, federal funding agencies require adherence to an active treatment framework in ICF-DD facilities. Active treatment has resulted in beneficial outcomes for individuals with disabilities. One component of active treatment involves frequent interactions between staff and residents outside of training settings, as well as during habilitation programming. Mealtime provides multiple opportunities for DCS

to provide active treatment. Individuals with developmental disabilities often exhibit challenging behaviors during meals. Researchers have evaluated multiple procedures to decrease challenging behaviors during mealtime and increase adaptive skills in individuals with disabilities. These strategies are often resource intensive and may be difficult to manage in residential settings. Increasing positive interactions between DCS and individuals with disabilities has resulted in favorable client outcomes and may be a more resource efficient strategy to curtail challenging behaviors during meals. Although positive interactions often result in beneficial outcomes, researchers have found that DCS seldom initiate interactions with individuals with disabilities. Therefore, training staff to increase the quality and quantity of interactions is important.

Several studies have evaluated various procedures including didactic training, video training, modeling, feedback, and *in vivo* training as viable strategies to train staff in institutional settings to implement behavioral interventions. However, there are multiple limitations to the current institutional training literature. Potential limitations to the current literature are related to the feasibility of training procedures, the multi-component nature of training packages, the setting in which the training occurred, a lack of follow-up data and information regarding resident outcomes, and methodological limitations.

Many of the training packages that have been evaluated are time and resource intensive (e.g., Macurik et al., 2008; Parsons et al., 1993; Sack et al., 1992). Several researchers have utilized training procedures that span several weeks. This may not be the most cost-effective strategy because staff responsibilities must be covered by others during training sessions. Additionally, the expense of trainers and commercially prepared training packages may be costly outside of the context of research. One issue related to

feasibility is the reliance on multicomponent training packages. Most researchers have evaluated multicomponent training packages that may include in-service seminars, video demonstrations, role plays, feedback, and *in vivo* training (e.g., Dufrene et al., 2012; Green et al., 1993; Parsons et al., 1993; Schepis & Reid, 1994; Sigafoos et al., 1992). Based on the available literature, it is difficult to determine whether one component or a combination of components is necessary to train staff to implement interventions with integrity. Component analyses may yield a more streamlined approach to training that is time and resource efficient. Another limitation of the literature relates to the setting in which the training occurred. Several studies have relied primarily on classroom-based training (e.g., Crosland et al., 2008; Guercio et al., 2005; Macurik et al., 2008; Parsons et al., 1993; Schepis & Reid, 1994). This prevents staff from practicing skills in the real-world setting. Allowing staff to practice skills in a naturalistic setting may allow for accelerated rates of skill acquisition, thereby improving the feasibility of training procedures.

Many of the studies that evaluated staff training have also failed to include adequate follow-up data (e.g., Green et al., 1993; Macurik et al., 2008; Schepis & Reid, 1994). Follow-up data are important to conclude whether the effects of training can be maintained without systematic feedback. Additionally, many studies failed to include data for resident behavior (e.g., Green et al., 1993; Macurik et al., 2008; Schepis & Reid, 1994). Therefore, it is impossible to conclude whether the intervention that the staff were trained to implement produced meaningful changes in resident behavior and acquisition of adaptive skills.

Methodological limitations such as too few data points (Parsons et al., 1993) or sequencing effects (e.g., Dufrene et al., 2012) sometimes make it difficult to interpret

results and may limit the conclusions that can be made. Additionally, many researchers fail to adequately describe the training procedures used. Unclear training procedures in some studies make it difficult to replicate training programs (e.g., Baker, Fox, & Albin, 1995). Another methodological limitation is a lack of direct measures of treatment integrity. Within the institutional training literature, many studies have relied on pre-and posttest measures of skill acquisition rather than direct measures of treatment integrity (e.g., Durnin & Freeman, 2005; Macurik et al., 2008). These studies have largely relied on paper and pencil tests to gauge skill acquisition. This method provides little information about whether the staff actually used the intervention with supported individuals.

The purpose of the current study is to add to the literature base that has evaluated training type as a strategy to increase DCS treatment integrity. This study sought to replicate and extend the findings of Dufrene et al. (2012). The primary purpose was to evaluate the effectiveness of direct training to increase the frequency of positive interactions during mealtimes between DCS and individuals with developmental disabilities. DCS were trained to increase positive interactions via *in vivo* training using a one-way radio device to prompt staff to initiate interactions. Additionally, the current study evaluated whether increases in positive interactions impacted resident behavior. Finally, the extent to which improvements were maintained in the absence of direct training were observed. This study potentially addressed some of the limitations of the institutional training literature. For one, the study proved to be a time and resource efficient strategy to train DCS to implement an intervention. Direct measures of treatment integrity and follow-up data were collected. Finally, changes in client behavior are reported. Following is a summary of the research questions:

## Research Questions

1. Will direct training during routine mealtime activities increase the rate of positive interactions between DCS and residents during mealtime?

2. To what extent will intervention implementation be maintained immediately following withdrawal of direct training and again at two weeks posttraining?

3. Will an increase in staff-to-resident positive interactions result in a decrease of challenging resident behaviors during mealtimes?

4. Will an increase in staff-to-resident positive interactions result in an increase in residents' adaptive and appropriate behaviors during mealtime?

# CHAPTER II

# METHODOLOGY

## Participants and Setting

Participants included four African-American female DCS, referred to by pseudonyms, who were employed at a state operated ICF-DD facility in one center located in the southeastern United States. Upon hire at the facility, each DCS completed a staff training course on implementing nutritional and physical supports. The facility was licensed to accommodate 1,222 residents. At the time of the study, 412 residents lived at the facility. There were 35 different active homes on grounds. The facility employed 621 DCS. To minimize contamination effects, DCS were recruited from different homes across the campus based on nominations from the Client's Rights Officer and psychology staff. DCS were selected for participation based on the following criteria: (a) the DCS engaged in low levels of positive interactions (i.e., fewer than one every two minute) with residents during baseline data collection; (b) the DCS were responsible for supporting residents during mealtimes; (c) the DCS reported that residents who they assisted frequently engaged in problematic behaviors during mealtime (e.g., rapid eating, self-injurious behavior, aggression, inappropriate vocalizations, rumination). Approval from the Institutional Review Boards at the University of Southern Mississippi (Appendix A) and the facility was obtained. Informed consent was acquired from each DCS (Appendix B).

Anne was a 35-year-old high school graduate who was employed at the facility for five years and worked with the individuals in her current home for one year. Anne was responsible for enhanced supervision of one individual for 40 hours per week. In this home, enhanced supervision required a staff member to be continually within five feet of

a particular resident who frequently engaged in aggressive behaviors. Six females, ranging from 16 to 22 years old diagnosed with mild to profound intellectual disabilities and pervasive developmental disorders, resided in the home where Anne worked. Of the individuals, two were nonverbal, two communicated using a few words and echoic phrases, and two communicated using full sentences and engaged in reciprocal interactions.

Faye was a 51-year-old high school graduate who was employed as a home manager with supervisory responsibilities over other DCS. She had been employed at the facility for 13 years and worked with the individuals in her home for the past three years. Twelve males, diagnosed with mild to profound intellectual disabilities ranging from 45 to 79 years old, resided in the home where she was assigned. Of the 12 residents, three communicated in full sentences and engaged in reciprocal interactions, two individuals communicated using a few words, and seven were nonverbal.

Michelle was a 29-year-old high school graduate who had one year of college experience. She was employed at the facility for three years and worked with the same residents for the duration of her employment. Michelle was responsible for enhanced supervision, on average, eight hours per week. There were 11 individuals who resided at the home where she was employed. The individuals ranged in age from 38 to 62 and were diagnosed with profound intellectual disabilities. Of the 11 residents, eight were nonverbal, two communicated using a few words, and one was capable of engaging in some reciprocal interactions.

Christine was a 30-year-old high school graduate who was employed at the facility for eight years and worked with the individuals in her home for two years. She was responsible for enhanced supervision, on average, eight hours per week. Thirteen

males ranging in age from 20 to 57 with mild-to-moderate intellectual disabilities resided at the home where Christine was assigned. All of the individuals were capable of communicating in full sentences and engaging in reciprocal interactions; however, two individuals seldom engaged in any interactions.

All observations were collected in the kitchen area during breakfast, lunch, or dinner. Each home was observed during the same meal for the duration of the study (i.e., Anne was always observed at lunch). Observation times were selected based on the times at which problematic mealtime behaviors were most likely to occur as reported by DCS.

## Materials

### *One-Way Radio*

A one-way radio equipped with a headphone was used by the experimenter to deliver prompts to the DCS. The DCS received didactic training on operating the radio prior to use including how to turn the radio on, adjust the volume, and use the ear bud.

### *Social Validity*

Each DCS completed a modified Intervention Rating Profile-15 after the follow-up sessions to measure acceptability of the interventions (IRP-15) (Martens, Witt, Elliott, & Darveaux, 1985) (see Appendix C). The IRP-15 includes 15 statements related to treatment acceptability. The IRP-15 is a one-factor Likert-type scale in which interventionists rate their level of agreement or disagreement on a six-point scale where a score of 1 indicates they *strongly disagree* and a score of 6 indicates they *strongly agree*. There is a range of scores from 15 to 90. If a score is over 52.5 it is considered that the interventionist perceived the intervention as acceptable. The IRP-15 has Cronbach's alpha of .98, indicating high internal consistency (Martens et al., 1985). In the current study, the IRP-15 was modified by replacing the phrase *problem behavior*, with *mealtime*

*behavior concerns*. Additionally, *teacher* was replaced with *direct care staff*, and *child* with *individual*. Previous researchers have found that altering the wording of the IRP-15 does not influence the psychometric properties (Freer & Watson, 1999; Sheridan, 1992).

*Job Satisfaction*

Each DCS completed the Job Satisfaction Survey (JSS) prior to baseline data collection and again after the follow-up phase to assess the extent to which she was satisfied with her current position (Appendix D). The JSS is a 36-item questionnaire that is scored on a six-point Likert scale where a score of 1 indicates the individual *disagrees very much* and a score of 6 indicates the individual *agrees very much* (Spector, 1985; 1997). The JSS assesses employee satisfaction across nine domains of job satisfaction. Areas assessed include the respondent's perception of Pay, Promotion, Supervision, Fringe Benefits, Contingent Rewards, Operating Procedures, Coworkers, Nature of Work, and Communication. All items are summed to yield a Total Score, which ranges between 36 and 216. Total Scores are interpreted as follows: Dissatisfied (36 to 108), ambivalent (108 to 144), and satisfied (144 to 216). Internal consistency reliabilities are acceptable for each domain, and range from .60 (Coworkers domain) to .82 (Supervision domain). The internal consistency reliability score for the Total Score is .91.

*Feeding Problems*

The Screening Tool of fEeding Problems (STEP) (Matson & Kuhn, 2001) was administered to each DCS prior to baseline data collection to identify challenging mealtime behaviors (Appendix E). The STEP is a 23-item scale that assesses the frequency and severity of common feeding problems in individuals with developmental disabilities. Technical adequacy data for the STEP indicate acceptable test-retest reliability ($r$ = .72) and cross-rater reliability ($r$ = .71). Typically, the STEP is

individually administered; however, during this administration the wording was modified to assess problematic mealtime behaviors across all residents. For example, the item "He/she spits out their food before swallowing" was modified to "Do any of the residents spit out their food before swallowing?" It is unknown whether modifications to this measure alter the psychometric properties.

## Dependent Variables, Response Measurement, and Data Collection Procedures

### *Direct Care Staff Behavior*

The primary dependent variable for DCS was the rate of positive verbal interactions initiated and maintained by the DCS. An additional dependent variable for DCS was the rate of negative verbal interactions initiated by the DCS.

#### *Positive Verbal Interactions*

These were defined as any verbalization spoken to any resident in a normal, excited, or positive tone of voice that expressed approval of a resident's actions or helped to facilitate dialogue between the DCS and a resident. Positive verbal interactions also included open-ended questions geared to solicit information from a resident about their needs or desires (e.g., "Tommy, what is your favorite meal?"). For residents who were non-verbal, positive verbal interactions included statements made by the DCS that were relevant to the residents but did not require a spoken response (i.e., "John, you are doing a great job eating with your spoon.").

#### *Negative Verbal Interactions*

These were defined as any statement made by the DCS to any residents that expressed disapproval of a behavior. Negative statements included reprimands and commands issued by the DCS. Negative verbal interactions also included sighing,

huffing, puffing, cursing, and/or yelling in a tone louder than what is necessary for the resident to hear the DCS.

*Resident Behavior*

An additional dependent variable was residents' challenging mealtime behavior. Challenging mealtime behaviors at each home were identified by interviewing each DCS using the STEP. Anne identified self-injurious behavior (i.e., banging head or ears with hands, banging head on table, inserting objects into ears, picking skin, or pinching self), rapid eating (i.e., inserting a spoonful of food prior to chewing food already in mouth, inserting a spoonful of food that was overfull), and physical aggression (i.e., hitting, biting, kicking, or pinching staff or other residents, property destruction) as behavioral concerns. Faye identified food refusal (i.e., refusing to take a bite of food, pushing away plate of food, pushing away staff who are offering a bite of food), stealing or grabbing items (i.e., taking another individual's food, grabbing décor or toys from the environment prior to the end of the meal), and rapid eating as behavioral concerns. Michelle identified stealing food, rapid eating, and rumination as behavioral concerns. Christine identified rapid eating, physical aggression, and inappropriate vocalizations (i.e., speaking obscenities, speaking with food in mouth, yelling) as behavioral concerns.

Additionally, positive interactions initiated by the resident were also coded. Positive interactions initiated by the resident were defined as any verbalization or gesture that indicated pleasure or social exchange between the resident and the DCS or another resident. Positive interactions initiated by the resident also included any attempts for the resident to request assistance from the DCS in a manner appropriate to his/her developmental level and communicative ability.

The dependent variables were recorded manually using observational coding forms (Appendix F). Frequency of DCS interactions were converted to a rate-based measure by recording frequency of interactions within intervals and are reported as the number of interactions per minute during observation sessions consisting of 10-second intervals. All residents were observed simultaneously. Data for resident behaviors were aggregated across all residents (i.e., scored if any resident engaged in a target behavior during the interval) and reported as the percentage of 10-second intervals in which behaviors occurred. Experimenters used an MP3 player that had an audio track to provide prompts to begin a new interval every 10 seconds throughout the observation session. Observations began when one resident sat down at the table until the last resident left the table. Observations were conducted for the duration of the meal up to 20 minute (*M* = 17.5 minute; range, 10 minute to 20 minute). Data collection was conducted by advanced-level doctoral students who were completing a pre-doctoral internship in psychology and/or by other trained research assistants (i.e., graduate practicum students). All data collectors were trained by the primary experimenter in direct observation procedures by reviewing the operational definitions of the behaviors and by conducting observations with the primary experimenter. Additionally, all data collectors were made aware of the communicative abilities of each resident. Most of the data collectors had some familiarity with the residents prior to the start of data collection and, therefore, were aware of communicative abilities prior to collecting data for this study. Each data collector was required to meet a 90% agreement criterion with the primary experimenter for variables of interest prior to independently collecting data. Each observation session included one to two experimenters observing interactions between DCS and residents during mealtime from an unobtrusive location in the eating area.

## Experimental Design

The current study employed a multiple baseline design across four participants to evaluate the effects of direct training on the rate of positive interactions initiated by DCS to residents during mealtime. The fourth participant who was initially recruited for the study resigned from her position at the facility prior to implementation of the direct training phase. Another participant (Christine) was recruited, and her data were collected non-concurrently from the other three participants. Data collection for Christine began 10 days after the beginning of data collection for the other participants. The multiple baseline design included baseline, direct training, maintenance, and a two-week follow phase.

## Data Analysis and Phase Change Decision Rules

Data were analyzed visually for level, trend, and stability. The rate of DCS positive interactions was used as the primary dependent variable to make phase change decisions. During baseline, when the rate of positive interactions was at a stable low level or there was a decreasing trend, the direct training phase was implemented for the first DCS. Phase changes for each subsequent DCS occurred when there was a decreasing or stable trend in the next DCS's initiation of social interactions in baseline as well as an increasing or stable trend in the previous DCS's positive interactions in the intervention phase. Direct training was terminated following a minimum of five sessions in which the DCS' rate of positive interactions was greater than rates observed during baseline.

## Procedures

### *Baseline*

During baseline, DCS were not provided with any information related to training or the dependent variables of interest. DCS and resident behaviors were recorded. Following baseline, the DCS received direct training that included real-time prompts via a one-way radio.

### *Direct Training*

During the direct training phase, the primary experimenter provided the DCS with real-time verbal prompts to initiate positive interactions. Prompts were delivered via a one-way radio. Prior to the inception of direct training, the experimenter had a brief (i.e., two to three minute) conversation with the DCS to explain the purpose of the selected intervention (i.e., increasing positive interactions). During this meeting, the experimenter explained how to operate the one-way radio. Immediately before each training session, the experimenter met with the DCS to provide the receiver. The experimenter and DCS verified that the receiver was functioning, and the volume was set so that the DCS could adequately hear prompts. The DCS were instructed to repeat verbal prompts verbatim. Every two minutes the experimenter prompted the DCS to initiate a positive interaction with any resident regardless of whether she recently initiated an interaction independently. For example, the experimenter prompted the DCS to say things like "John, what do you want to do after lunch?" The research literature does not include definitive evidence regarding the number of praise statements and positive vocalizations needed to maintain appropriate behavior. Therefore, one statement every two minutes was chosen based on professional judgment as it related to the duration of the mealtimes and observation period lengths. The observation coding sheet was highlighted in two-

minute intervals to cue the experimenter to prompt the DCS to initiate a social interaction. Following direct training, a maintenance phase was implemented.

*Maintenance and Two Week Follow-up Phases*

A maintenance phase was conducted to evaluate whether the DCS continued to initiate positive interactions with the resident in the absence of prompting. In the maintenance phase, the experimenter observed mealtimes; however, during these observations the experimenter did not provide any prompts or feedback to the DCS, unless increases in positive interactions were not maintained. For one participant (i.e., Christine) increases in positive interactions were not maintained. After three sessions in which she failed to meet the criterion, a brief (i.e., three minute) performance feedback session was conducted. During the performance feedback session, the experimenter reviewed the rationale for increasing positive interactions, provided corrective feedback (Codding, Feinberg, Dunn, & Pace 2005), and addressed any questions presented by the participant (Mortenson & Witt, 1998). Maintenance data were collected for at least five sessions. After the maintenance phase, the experimenter did not contact the DCS. Two weeks after the conclusion of the maintenance phase, follow-up data were collected. A minimum of three follow-up sessions were conducted with each participant. During follow-up, the experimenter did not provide prompts or feedback, and sessions were conducted in an identical manner as in the maintenance phase.

## Interobserver Agreement (IOA) and Procedural Integrity

IOA data were collected for at least 20% of the sessions in each phase for all participants. A second data collector observed DCS' and residents' behaviors at the same time as the primary experimenter. Agreement for these target variables was calculated by dividing the number of agreed upon behaviors within intervals by the number of agreed

and disagreed upon behaviors within intervals and multiplying the quotient by 100. IOA data were collected for 37.5% of sessions for Anne, 50% of sessions for Faye, 47% of sessions for Michelle, and 42% of sessions for Christine. Table 1 depicts the mean percentages of IOA for each participant.

Procedural integrity was evaluated in 100% of the sessions in the form of a self-monitoring checklist completed by the experimenter (Appendix G). During baseline, maintenance, and follow-up, the experimenter recorded whether prompts, feedback, or other assistance were provided to the participants. During the direct training phase, the experimenter recorded whether the DCS was provided with the receiver, reminded the DCS to repeat prompts verbatim, and prompted the DCS to initiate an interaction with the resident every two minutes. Integrity was calculated based on the percentage of steps that the experimenter accurately included and was 100% across all phases for all participants. An independent observer evaluated procedural integrity data in approximately 37.2% of sessions. Agreement for procedural integrity was 100%.

Table 1

*Mean IOA Across Phases for Each Participant*

| | Anne | Faye | Michelle | Christine |
|---|---|---|---|---|
| DCS Positive Statements | | | | |
| Mean | 97.39 | 98.48 | 97.95 | 98.93 |
| Range | 91.78 – 100 | 97.63 – 100 | 92.19 – 100 | 95.09 – 100 |
| DCS Negative Statements | | | | |
| Mean | 96.34 | 99.21 | 98.29 | 99.21 |
| Range | 92.31 – 97.22 | 97.91 – 100 | 96.66 – 99.66 | 99 – 100 |

Table 1 (continued)

| | Anne | Faye | Michelle | Christine |
|---|---|---|---|---|
| Resident Challenging Behaviors | | | | |
| Mean | 98.51 | 99.35 | 99.65 | 99.26 |
| Range | 95.37 –100 | 99.30 – 100 | 99.41 – 100 | 99.33 – 100 |
| Resident Positive Interactions | | | | |
| Mean | 95.11 | 93.98 | 97.56 | 93.28 |
| Range | 90.32 – 100 | 87.6 – 100 | 92.5 – 100 | 73.73 – 99.17 |

*Note.* Mean and range scores represent percent agreement.

# CHAPTER III

# RESULTS

## *Anne*

Results for rate of positive and negative interactions are depicted in Figure 1 and the results for resident behaviors are depicted in Figure 2. Descriptive statistics for residents' behaviors are represented in Table 2. During baseline, Anne's mean rate of positive interactions was .04 per minute (range, 0 to 0.08). Baseline data for rates of positive interactions were stable and remained low during all observations. During baseline, Anne's mean rate of negative interactions per minute was .51 (range, .38 to .61) and a slight decreasing trend was observed. Residents exhibited low rates of challenging behaviors (i.e., rapid eating, aggression, self-injurious behaviors) and no instances of positive interactions were observed amongst residents.

When direct training was implemented, there was an immediate increase in the rate of positive interactions to above the criterion level (i.e., .5 per minute). An increasing trend was observed for the rate of positive interactions during direct training. There were no overlapping data points between baseline and direct training. The mean rate of positive interactions during the direct training phase was 1.26 (range, .69 to 1.85) per minute. During the direct training phase, the rates of negative interactions also temporarily increased from baseline levels, but ended on a decreasing trend with zero negative interactions observed during the last session. Overall, the mean rate of negative interactions was .57 statements per minute (range, .08 to .95), which is slightly above baseline levels. This increase may be attributed to Anne increasing her involvement and use of commands (e.g., slow down) with the residents following direct training, whereas

prior to training she ignored inappropriate behaviors. Overall, during the direct training phase, residents' challenging behaviors remained low and increases in positive interactions were observed (*M* = 8%; range, 0% to 15%).

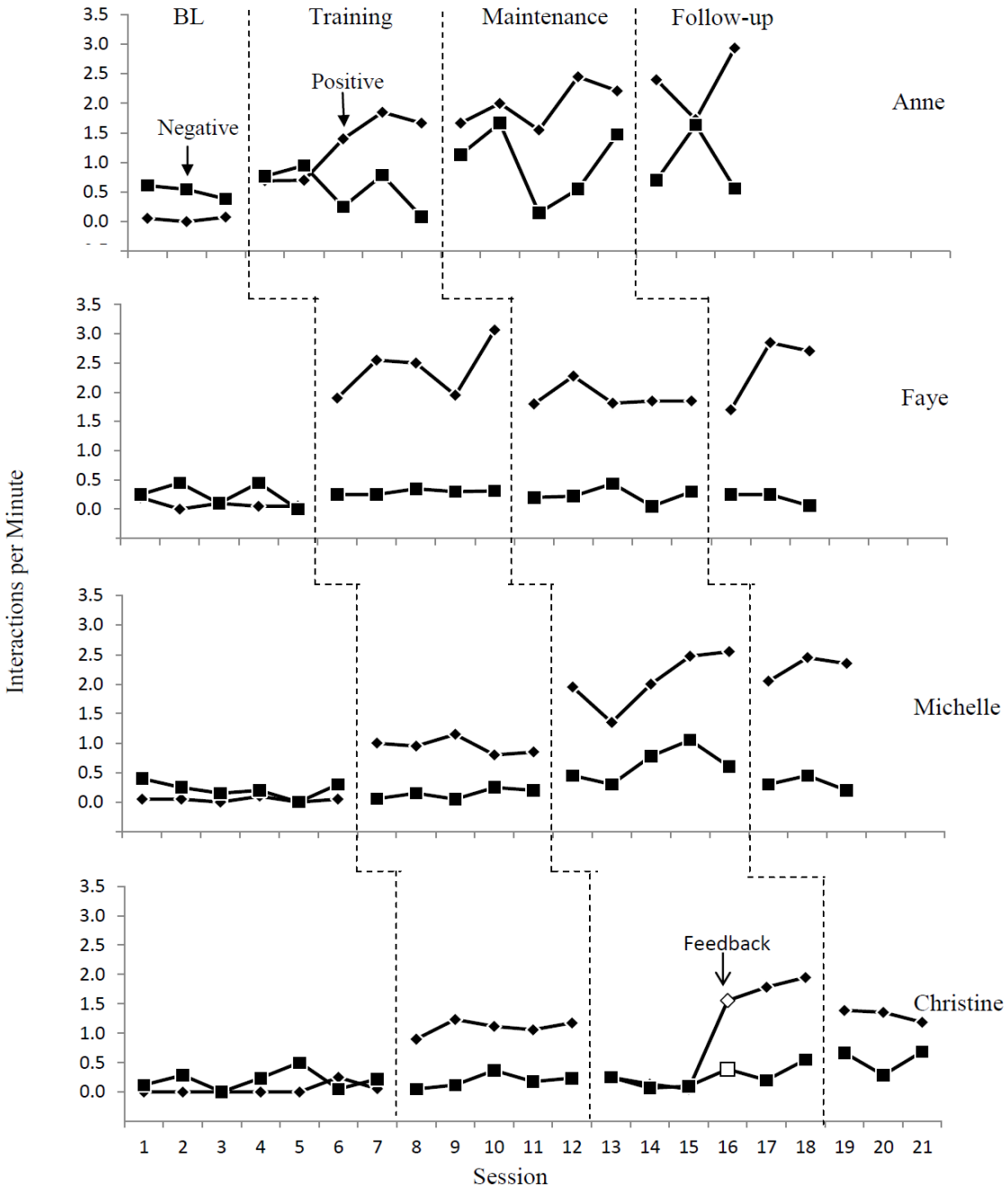


*Figure 1*. DCS Rates of Positive and Negative Interactions

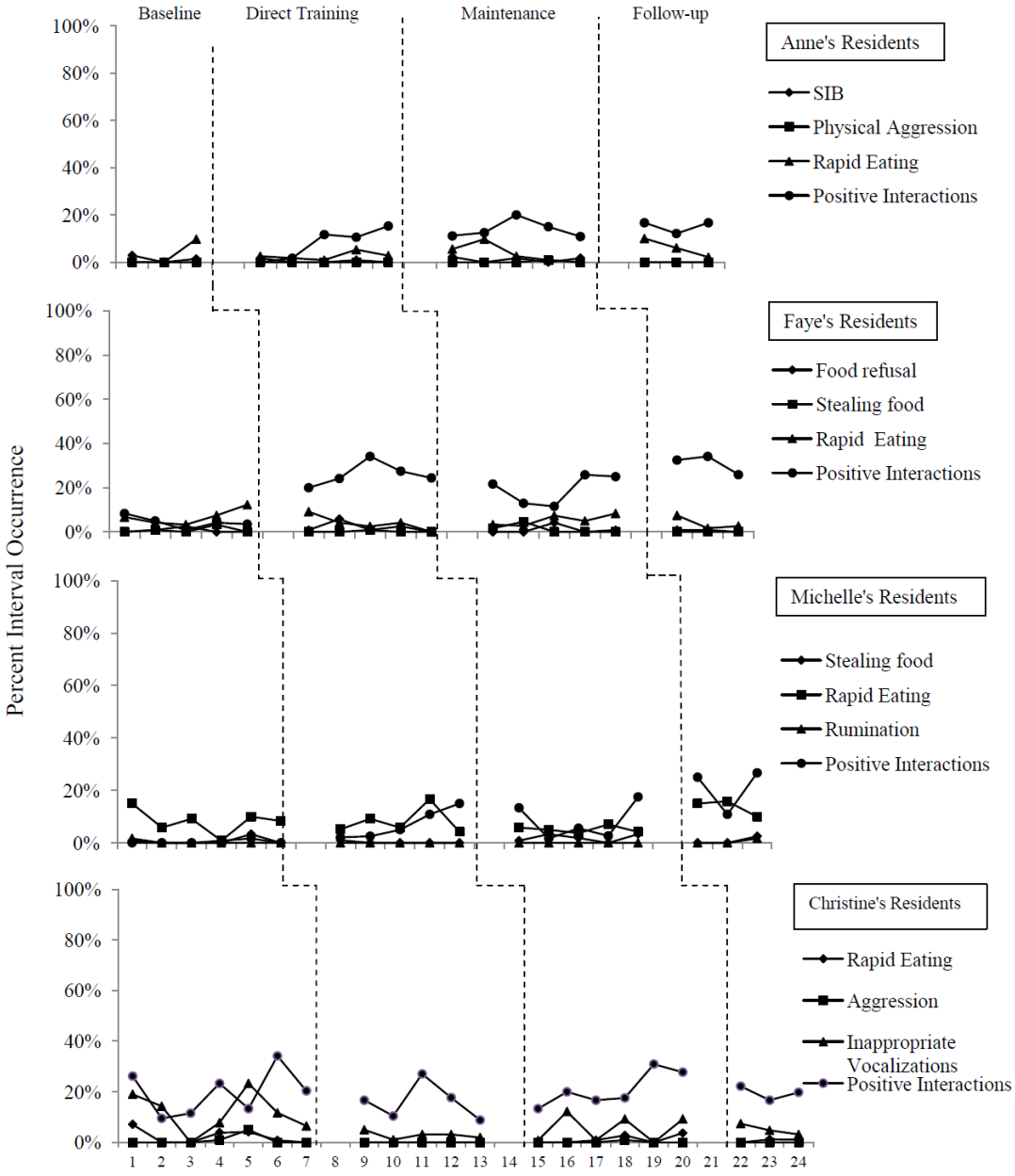


*Figure 2.* Percentage of intervals in which resident behaviors were observed.

Table 2

*Resident Behaviors Across Phases*

| | BL | T | M | F/U |
|---|---|---|---|---|
| Anne | | | | |
| SIB | 1 | 1 | 1 | 0 |
| Aggression | 0 | 0 | 0 | 0 |
| Rapid | 3 | 3 | 4 | 6 |
| Pos Int | 0 | 8 | 14 | 15 |
| Faye | | | | |
| Refusal | 1 | 2 | 1 | 1 |
| Stealing | 1 | 0 | 1 | 0 |
| Rapid | 7 | 4 | 5 | 4 |
| Pos Int | 4 | 26 | 19 | 31 |
| Michelle | | | | |
| Stealing | 1 | 0 | 2 | 1 |
| Rapid | 8 | 8 | 5 | 14 |
| Rumination | 0 | 0 | 0 | 1 |
| Pos Int | 0 | 7 | 8 | 21 |
| Christine | | | | |
| Rapid | 2 | 0 | 1 | 1 |
| Aggression | 1 | 0 | 0 | 0 |
| Voc | 12 | 3 | 5 | 5 |
| Pos Int | 20 | 16 | 21 | 20 |

*Note.* Scores represent mean percentage of intervals across phases in which behaviors were observed. BL = baseline; T = training; M = maintenance; F/U = follow-up; SIB = self-injurious behavior; Rapid = rapid eating; Voc = inappropriate vocalizations; Pos Int = positive interactions.

During the maintenance phase, Anne's rate of positive interactions continued to increase ($M$ = 1.98; range, 1.55 to 2.45). All data points remained above the established criterion and the levels observed in baseline. Rates of negative interactions were variable ($M$ =.99; range, .15 to 1.67). An increasing trend was observed in the rates of positive

interactions during the last three observations in the maintenance phase. Residents' challenging behaviors remained at low levels and rates of positive interactions continued to increase (*M* = 14%; range, 11% to 20%). Similar rates of positive interactions were observed at a two week follow-up (*M* = 2.35; range, 1.73 to 2.94). Rates of negative interactions also remained similar to the maintenance phase (*M* = .97; range, .56 to 1.64). Residents continued to exhibit low rates of problem behaviors, and rates of residents' positive interactions continued to increase (*M* = 15%; range, 12% to 17%).

*Faye*

During baseline, Faye's mean rate of positive interactions was .08 per minute (range, 0 to 0.2). Baseline data for rates of positive interactions were stable and remained low across all observations. During baseline, Faye's rate of negative interactions was stable at an average of .25 per minute (range, .0 to .45). Residents exhibited low rates of challenging behaviors (i.e., rapid eating, food refusal, stealing/grabbing). The most frequently observed behavior was rapid eating (*M* = 7%; range, 0% to 12%). Residents also engaged in low rates of positive interactions (*M* = 4%; range, 1% to 8%).

Once direct training was implemented, there was an immediate and substantial increase in Faye's rate of positive interactions from baseline (*M* = 2.39; range, 1.9 to 3.07). Compared to baseline, there were no overlapping data points and each datum was well-above the established criterion. Faye's rate of negative interactions was stable, remaining at levels similar to baseline (*M* = .29; range, .25 to .35). The mean percentage of intervals in which residents' challenging behaviors were observed slightly decreased to 4%. Substantial increases in residents' positive interactions were also observed (*M* = 26%; range, 20% to 34%).

Faye's rate of positive interactions during the maintenance phase was stable and remained at levels above the criterion. Overall, her average rate of positive interactions decreased slightly from direct training (*M* =1.91; range, 1.7 to 2.28). Additionally, her average rate of negative interactions slightly decreased from the direct training phase (*M* = .24; range, .2 to .44). During the maintenance phase, residents engaged in low levels of challenging behaviors, with rapid eating continuing to be the most commonly observed (*M* = 5%; range, 3% to 8%). Residents continued to exhibit increases in positive interactions (*M* = 19%; range, 12% to 26%) when compared to baseline; however, there was a slight decrease in the average positive interactions from direct training.

Faye maintained high rates of positive interactions at a two week follow-up. In fact, her average rate of positive interactions (*M* = 2.42; range, 1.7 to 2.85) increased from maintenance. In addition, Faye's rates of negative interactions (*M* = .19; range, .06 to .25) slightly decreased from direct training. However, this decrease is likely negligible as rates of negative interactions remained fairly stable once the direct training phase was implemented.

*Michelle*

During baseline, Michelle's rates of positive and negative interactions remained low and stable. Her average rate of positive interactions was .04 per minute (range, 0 to .1), and her average rate of negative interactions was .22 per minute (range, 0 to .25). Residents exhibited low rates of challenging behaviors (i.e., stealing food from others, rapid eating, rumination). Rapid eating was the most commonly observed challenging behavior and occurred, on average, in 8% of intervals (range, 1% to 15%). Residents also exhibited low rates of positive interactions (*M*=0%; range, 0% to 2%).

When direct training was implemented, there was an immediate increase in Michelle's rate of positive interactions (*M* = .95; range, .8 to 1.15) from baseline. Visual analysis of Michelle's data indicates a slight decreasing trend in rates of positive interactions across the direct training phase; however, all data points were above the criterion. Michelle's rate of negative interactions (*M* = .14; range, .05 to .25) remained at levels similar to those observed in baseline. Residents continued to engage in low rates of challenging behaviors. Rapid eating continued to be the most commonly observed challenging behavior. Residents increased rates of positive interactions to an average of 7% of intervals (range, 2% to 15%).

There was an immediate and substantial increase in Michelle's rate of positive interactions during the maintenance phase (*M* = 2.06; range, 1.35 to 2.55). Visual analysis of data indicated an increasing trend. During the maintenance phase, Michelle initiated more positive interactions from baseline and direct training, and there were no overlapping data points compared to direct training or baseline. During maintenance, an increasing trend was also observed for Michelle's rate of negative interactions, which occurred at rates higher than those observed in the other phases (*M* = .64; range, .3 to 1.05). Similar to Anne, it is possible that this increase could be attributed to her overall increased involvement with the residents, including a willingness to correct challenging behaviors. Residents continued to engage in low rates of challenging behaviors with rapid eating most commonly observed (*M* = 5%; range, 4% to 7%). Residents also engaged in positive interactions at rates similar to those observed during direct training (*M* = 8%; range, 2% to 18%).

At two week follow-up, Michelle continued to exhibit rates of positive interactions that were similar in level to the maintenance phase. Her mean rate of positive

interactions per minute was 2.28 (range, 2.05 to 2.45). Additionally, her rates of negative interactions decreased from the maintenance phase (*M* = .31; range, .2 to .45). Residents continued to engage in relatively low levels of challenging behaviors; however, there was an increase in the percentage of intervals in which rapid eating was observed (*M* = 14%; range, 10% to 16%). There was also a dramatic increase in the percentage of intervals in which residents were observed to engage in positive interactions (*M* = 21%; range, 11% to 25%).

*Christine*

Christine's baseline phase began 10 days after the other participants' baselines began. During baseline, Christine exhibited low and stable levels of positive interactions (*M* = .04; range, 0 to .25). In fact, her rate of positive interactions was at zero for seven out of nine observations. During baseline, Christine's rate of negative interactions also occurred at fairly low levels (*M* = .20; range, 0 to .5); however, these data were more variable than data for the rate of positive interactions. Residents engaged in low rates of challenging behaviors (i.e., rapid eating, physical aggression, inappropriate vocalizations). Inappropriate vocalizations were most commonly observed (*M* = 12%; range, 0% to 23%). Residents also engaged in regular positive interactions (*M* = 20%); however, these interactions were initially discouraged by staff during mealtime due to dysphagia risk and the frequent occurrence of inappropriate verbal interactions between two particular residents.

When direct training was implemented, there was an immediate and substantial increase in rate of positive interactions to above the criterion. Rate of positive interactions was stable throughout the direct training phase (*M* = 1.10; range, .9 to 1.24), and there were no overlapping data points compared to baseline. Additionally, rates of negative

interactions became somewhat less variable than the rates observed during baseline, although the mean rates of negative interactions were similar between the two phases (*M* = .19; range, .05 to .37). During this phase, residents exhibited lower levels of challenging behaviors compared to baseline. Inappropriate vocalizations continued to be the most frequently observed challenging behavior (*M* = 3%). Residents continued to engage in regular positive interactions (*M* = 16%; range, 9% to 27%).

During maintenance, there was an initial drop in Christine's rate of positive interactions to .25 statements per minute. Christine maintained at low levels of positive interactions for three sessions, at which point one session of performance feedback was implemented. Performance feedback included a three-minute session in which the rationale for increasing positive interactions was reviewed, as well as examples of positive interactions, and corrective feedback. Christine stated that she was unaware that she was supposed to be interacting with residents after the direct training sessions were completed. Following feedback, Christine immediately increased her rate of positive interactions to 1.56 per minute. Overall, Christine's average rate of positive interactions during maintenance was .95 per minute (range, .05 to 1.95). During maintenance, Christine continued to engage in low rates of negative interactions (*M* = .26; range, .07 to .55). Residents exhibited low levels of challenging behaviors, and inappropriate vocalizations continued to be most commonly observed (*M* = 5%; range, 0% to 12%). Additionally, there was a slight increase in residents' rates of positive interactions compared to direct training (*M* = 21%; range, 13% to 31%).

At two week follow-up, there was an initial decrease in Christine's rate of positive interactions from maintenance. Additionally, a slight decreasing trend was observed across the phase. However; rates of positive interactions were above the criterion and

levels observed during baseline. On average, Christine engaged in 1.31 positive interactions per minute (range, 1.19 to 1.39). Compared to other phases, Christine's rate of negative interactions increased slightly at the two week follow-up (*M* = .55; range, .29 to .69). Residents' rate of challenging behaviors maintained at similar levels to other phases. Inappropriate vocalizations continued to be most commonly observed (*M* = 5%; range, 3% to 7%). Additionally, residents' rates of positive interactions remained at levels similar to the other phases (*M* = 20%; range, 17% to 22%).

## Social Validity

The IRP-15 and JSS were administered as measures of social validity to evaluate various aspects of DCS intervention acceptability and job satisfaction. Results are summarized in Table 3. The IRP-15 was administered after two week follow-up. All participants, with the exception of Anne, rated the intervention as acceptable (i.e., scores >52.5) however, Anne's ratings may have been due to extraneous variables (i.e., she was contemplating resignation from her position the day she completed the follow-up IRP-15).

Administration of the JSS was conducted prior to the start of baseline and again following the conclusion of data collection during the two-week follow-up phase. Interestingly, all participants reported increases in job satisfaction over the course of this study. Initially, Anne's scores indicated that she was ambivalent about her position. While her second administration indicated a slight increase in job satisfaction, the difference was likely too small to be meaningful, and her ratings continued to reflect ambivalence. Michelle's initial ratings indicated that she was dissatisfied with her employment. At the follow-up administration, her scores greatly increased to levels that were near satisfied. The initial scores of both Faye and Christine indicated that they were

satisfied with their positions. At follow-up, both participants' responses indicated slightly higher levels of satisfaction than the first administration.

Table 3

*DCS Scores on Measures of Social Validity*

| | IRP-15 | JSS | |
|---|---|---|---|
| DCS | F/U | BL | F/U |
| Anne | 30 | 119 | 120 |
| Faye | 65 | 153 | 176 |
| Michelle | 62 | 104 | 132 |
| Christine | 71 | 149 | 168 |

*Note.* DCS = direct care staff; IRP-15 = Interventionist Rating Profile; JSS = Job Satisfaction Survey; F/U = follow-up; BL = baseline.

Taken together, ratings on the IRP-15 and JSS indicated that participants perceived the intervention as acceptable. Additionally, job satisfaction ratings increased or remained stable across all participants following this study.

# CHAPTER IV

# DISCUSSION

The current study expanded upon the institutional training literature by evaluating the use of *in vivo* prompts via a one-way radio to increase rates of DCS positive interactions with residents during mealtimes. Individuals with developmental disabilities commonly exhibit challenging behaviors during meals. Previous researchers have reported positive outcomes (e.g., improved happiness ratings and a sense of belonging, increased engagement in leisure activity, increased alertness, decreases in challenging behaviors) when DCS regularly engage residents in positive interactions (e.g., Carsrud et al., 1986; Favel et al., 1996; Jahoda et al., 1990; Realon et al., 2002). Therefore, increasing positive interactions may be a resource-efficient strategy to ameliorate challenging behaviors during meals. Although positive interactions often result in beneficial outcomes, researchers have found that DCS seldom initiate interactions with individuals with disabilities (e.g., Chan & Yau, 2002; Moorse & Grant, 1976; Repp et al., 1987). It is conceivable that DCS must receive specific training to increase the quality and quantity of interactions with residents.

Training DCS employed in ICF-DD facilities poses unique challenges for trainers, given that DCS often have a wide variety of educational and applied experiences. Additionally, DCS may lack motivation to complete job responsibilities due to low pay and long hours. Given the importance of ensuring staff competence, researchers have evaluated various training and follow-up procedures to train DCS to implement interventions with integrity. The most widely researched procedures often include didactic training, video training, modeling, feedback, and/or *in vivo* training. Whilst these procedures have received some support, there are multiple limitations to the current

institutional training literature. Potential limitations are related to the feasibility of training procedures, the multicomponent nature of training packages, the setting in which the training occurred, a lack of follow-up data and information regarding resident outcomes, and methodological limitations.

Given these limitations, additional research evaluating staff training procedures in ICF-DD facilities is certainly warranted. It is important that researchers identify the most streamlined, yet effective, strategies as training procedures must be time and resource efficient to meet the needs of the agency and the individuals residing at the facilities. This study sought to address some of the limitations of the current institutional training literature. Specifically, the current study evaluated the effects of *in vivo* prompts delivered via a one-way radio to increase the rate of positive interactions between DCS and residents. Research in the school-based literature has found these procedures to be an effective strategy to train teachers to increase rates of praise and the use of effective instruction delivery (Bowles & Nelson, 1976; Dufrene et al., n.d.). To date, no studies have incorporated these procedures to train DCS employed in ICF-DD facilities to implement interventions. Furthermore, this study sought to address some of the limitations of the current institutional training literature by including direct measures of treatment integrity, as well as maintenance and follow-up data. Finally, client outcomes related to rates of challenging and adaptive behaviors are also reported.

The first research question evaluated whether DCS would increase rates of positive interactions following direct training with *in vivo* prompts. The results indicated that all four participants increased rates of positive interactions following direct training. During baseline, all participants engaged in low rates of positive interactions. Most interactions tended to be negative and commonly involved commands initiated by DCS

instructing the resident to either engage in a behavior or cease engagement in a behavior. When direct training was implemented, prompts to initiate a positive interaction were delivered by the experimenter at a rate of one every two minutes. All participants met this criterion and surpassed expectations by independently initiating positive interactions. Across participants, there were no overlapping data points between baseline and direct training. Additionally, when direct training was implemented, rates of negative interactions decreased and stabilized for Faye, Michelle, and Christine. Anne's rate of negative interactions was somewhat higher than those observed during baseline; however, a decreasing trend was observed across the direct training phase. Anne worked in a home where individuals required frequent redirection to engage in appropriate behaviors. Although her rates of negative interactions increased with direct training, it is possible that she was taking more initiative to assist individuals in engaging in appropriate and adaptive behaviors. Therefore, more instructions may have been issued, inflating her rate of negative interactions.

Previous researchers have often failed to include adequate maintenance and follow-up data when evaluating DCS training procedures (e.g., Green et al., 1993; Macurik et al., 2008; Schepis & Reid, 1994). When these data are not included it is difficult to evaluate the lasting impact of training and feedback procedures. The second research question evaluated the extent to which intervention implementation would be maintained immediately following withdrawal of direct training and again at two weeks post-training. Results from this study are similar to Dufrene et al. (2012) in that DCS continued to exhibit high rates of positive interactions during maintenance, in the absence of prompts from the experimenter, with one exception. Initially, Christine's rate of positive interactions decreased when prompts were no longer provided. After three

sessions of low rates, a single feedback session was implemented and her rate of interactions stabilized at levels above those observed during direct training.

The current study also included follow-up data two weeks after the maintenance phase was terminated. All participants maintained adequate rates of positive interactions that were at or above levels observed during the direct training and maintenance phases. These data suggest direct training using *in vivo* prompts may be adequate for DCS to incorporate more frequent positive interactions with residents at ICF-DD facilities in the absence of systematic feedback.

The third research question evaluated whether an increase in staff-to-resident positive interactions resulted in a decrease of challenging resident behaviors during mealtimes. Through administration of the STEP, each DCS identified challenging behaviors that she perceived frequently occurred during mealtimes. Baseline data across participants revealed that problem behaviors occurred at low levels. Although challenging behaviors were seldom observed during baseline, some were sufficiently intense (i.e., self-injurious behaviors) to warrant intervention. However, low rates of behavior make these data impossible to interpret. In most cases, rates of challenging behaviors maintained at stable levels across phases for participants, despite increased rates of DCS positive interactions. In one instance, there was a clear decrease in the percentage of intervals in which challenging behaviors occurred. Specifically, the residents in Christine's home decreased inappropriate vocalizations when the direct training phase was implemented, and she increased rate of positive interactions. The rate of inappropriate vocalizations stabilized for the residents during the maintenance and follow-up phases. However, the change in rates may have been too small to be meaningful. There were also some instances in which rates of residents' challenging

behaviors increased. Specifically, increases in rapid eating were observed in Anne's and Michelle's data. It is conceivable that the intervention (i.e., positive interactions) was not sufficient to decrease certain challenging behaviors (i.e., rapid eating). To decrease rapid eating, procedures such as response blocking, prompts, or DRL may be more effective (Favell et al., 1980; Wright & Vollmer, 2002).

Although data related to residents' challenging behaviors are difficult to interpret, these data may still be a useful addition to the current institutional training literature as a majority of previous studies failed to include objective data on client outcomes. Additional research evaluating the impact of implementing interventions with integrity on residents' behavior is certainly warranted.

The fourth research question evaluated residents' engagement in positive interactions. These results were particularly encouraging. Findings demonstrated increases in residents' positive interactions across three participants (e.g., Anne, Faye, Christine) when rates of DCS interactions increased. Initial rates of positive interactions in Christine's home were adequate during baseline and maintained high levels across phases. These data lend support to previous research findings, which have reported improved treatment outcomes for residents when regular positive interactions are incorporated into active treatment (e.g., Carsrud et al., 1980; Favell et al., 1996; Green et al., 1997; Ivancic et al., 1997; Realon et al., 2002).

Increases in the residents' rates of positive interactions may help to explain changes observed in DCS' use of positive interactions. During training, DCS' rates of positive interactions were influenced by an antecedent controlling variable (i.e., prompts). However, when the prompts were removed, all participants with the exception of Christine continued to meet the criterion for rate of positive interactions. Following a

feedback session, Christine also increased her rate of positive interactions to acceptable levels. DCS behavior changes could have been maintained by natural consequences. A potential explanation is that DCS increased initiation of positive interactions were positively reinforced by increases in residents' positive interactions. The residents in Christine's house already engaged in high rates of positive interactions during baseline. Therefore, she may not have been as influenced by this natural consequence.

## Implications for Practice

The results of the current study have potential implications for informing practice in ICF-DD facilities. For one, ICF-DD facilities must develop time and resource efficient training procedures for DCS. This is especially important given the wide range of educational and applied experiences amongst DCS. The results of the current study indicated that direct training using real-time prompts was effective for teaching DCS to increase rates of positive interactions delivered to residents. All participants increased rates of positive interactions from baseline and maintained at levels above the criterion during maintenance and follow-up phases; however, one participant required a single feedback session to achieve the criterion. In applied settings, some individuals may not initially respond to training, but a brief performance feedback session may be sufficient to increase treatment integrity to adequate levels. Moreover, these training procedures were effective despite being relatively brief (i.e., 20 minutes or less) and only occurred for five sessions. Although increasing positive interactions is a relatively simple intervention, these training procedures hold promise for training DCS to implement more complex interventions. Given the results of this study, training personnel in ICF-DD facilities should consider incorporating *in vivo* direct training as part of the training procedures for DCS.

The emphasis of the current study was to evaluate DCS training procedures. However, the results may also inform practice when working with individuals with developmental and intellectual disabilities. When DCS increased rates of positive interactions, residents concomitantly increased their rates of positive interactions. Furthermore, the results of this study demonstrated that individuals diagnosed with moderate to profound intellectual disabilities may acquire social skills appropriate to their developmental level by simple exposure to appropriate behavior modeled by DCS. This finding lends support to previous research, demonstrating improved outcomes for residents with developmental disabilities when regularly engaged in positive social interaction with staff. Given these results, DCS employed in ICF-DD facilities should frequently engage residents in positive interactions during both structured and unstructured activities.

## Limitations

The current study extends the literature that has evaluated staff training procedures in ICF-DD facilities and has implications for future practice. However, there are some limitations that warrant discussion. First, although this study employed a multiple baseline design, Christine's data were collected nonconcurrently and began 10 days after the other three participants. Therefore, some concerns related to internal validity are raised. However, Watson and Workman (1981) describe the use of a non-concurrent multiple baseline in applied settings where data collection begins as participants become available. The authors reported that nonconcurrent designs can still effectively exclude history as a threat to internal validity and note this design to be particularly flexible for applied researchers.

A second limitation is that the observation periods varied in length and depended on the duration of the meal. Observations started when one resident sat at the table to eat and ended when the last resident completed his/her meal and left the table (or 20 minutes had elapsed). Due to the varying length of mealtime, some participants may have had more opportunities to practice positive interactions than others. However, the differences are thought to be negligible. Future researchers may consider controlling for the length of training sessions.

Another potential limitation is related to the number and variety of staff present during observations. When more staff were present, the target DCS may have had fewer responsibilities (e.g., serving food, blocking rapid eating, clearing the table) and more opportunity to engage in positive interactions with residents. Similarly, DCS may have been more or less likely to interact with residents when certain staff were present. For example, anecdotal data for Faye suggest that she was less likely to interact with residents when one particular staff member was present. Regardless, visual analysis of data indicated clear differences in four DCS' performances from baseline to training and through follow-up. Therefore, while uncontrolled variability in number of staff at the meal may have been a confound, it is likely that direct training had a greater impact on DCS performance. Additionally, although a variety of staff were present, this is common in institutional settings and may strengthen the external validity of this study. However, future researchers may consider collecting data on the number of staff present and controlling that variable to the extent possible. Unfortunately, staffing issues are common in ICF-DD facilities and controlling for this may be unavoidable to some extent.

The potential of reactivity of DCS to the observers is another limitation. All data were collected using direct observations. It is possible that DCS increased rates of

positive interactions when observers were present. However, efforts were made to conduct observations from an unobtrusive location to minimize reactivity. Additionally, multiple observers (i.e., five) were involved in data collection so DCS did not come to associate one observer in particular with the project. Finally, there were clear differences in the rate of positive interactions across participants from baseline to the maintenance and follow-up phases.

One DCS (i.e., Christine) did not maintain adequate rates of positive interactions during the maintenance phase. Therefore, performance feedback was implemented. Following the feedback session, Christine immediately increased rates of positive interactions. This introduces a potential confound, in that Christine's performance following feedback may be a function of the combined effects of training and the feedback session. However, this limitation may be useful for informing practice. Some individuals may not initially respond to training using a one-way radio; however, a brief feedback session may be all that is necessary to improve performance to criterion levels.

This study also sought to evaluate client outcomes. Throughout data collection, residents' challenging behaviors remained at relatively low levels. Therefore, it is impossible to evaluate the impact of increased positive interactions on the rate of challenging behaviors exhibited by residents. Resident data were analyzed based on percentage of intervals in which the behaviors were observed and may be an under-representation of actual behaviors. In other words, if rate-based measures were used to collect data on resident behaviors, different results may have been obtained. Future researchers may include screening procedures to select residents who engage in high rates of challenging behaviors so that a better evaluation of the impact of intervention implementation on resident behavior can be conducted.

Due to the informed consent procedures of the facility, data for individual residents were not permitted. Consequently, data for resident behaviors were aggregated across all participants. Therefore, it was impossible to evaluate individual response to treatment. In addition, there was some variation in the residents present for each observation due to employment, doctor's appointments, food refusal, etc. This may have impacted rates of resident behaviors for any given observation. Future researchers may consider designs to evaluate individual outcomes.

Finally, one of the purposes of this study was to evaluate a time and resource efficient strategy to train DCS to implement interventions in ICF-DD facilities. However, the procedures in this study were rather intensive and required considerable time (up to 80 minutes per day). Therefore, these procedures may be impractical to train large numbers of DCS on multiple residents' behavioral guidelines. Although demonstrated to be effective, these procedures may be best suited to small facilities that employ fewer DCS and house fewer residents. Alternately, these procedures may be useful in larger facilities to train DCS who have not mastered skills taught through staff training or, perhaps, those who are responsible for implementing complicated behavioral interventions. It is also important to note the intervention that the participants in this study were trained to implement (i.e., increasing positive interactions) was fairly rudimentary. Future researchers should evaluate direct training using a one-way radio to train staff to implement complex, individualized behavior interventions.

In summary, the results of this study demonstrated that DCS responded to direct training that incorporated *in vivo* prompts via a one-way radio. Although the preliminary results are encouraging and provide a novel and effective approach to training staff in ICF-DD facilities, much research in this area is still needed.

# APPENDIX A

## INSTITUTIONAL REVIEW BOARD APPROVAL

THE UNIVERSITY OF
SOUTHERN MISSISSIPPI

**INSTITUTIONAL REVIEW BOARD**
118 College Drive #5147 | Hattiesburg, MS 39406-0001
Phone: 601.266.6820 | Fax: 601.266.4377 | www.usm.edu/irb

**NOTICE OF COMMITTEE ACTION**

The project has been reviewed by The University of Southern Mississippi Institutional Review Board in accordance with Federal Drug Administration regulations (21 CFR 26, 111), Department of Health and Human Services (45 CFR Part 46), and university guidelines to ensure adherence to the following criteria:

- The risks to subjects are minimized.
- The risks to subjects are reasonable in relation to the anticipated benefits.
- The selection of subjects is equitable.
- Informed consent is adequate and appropriately documented.
- Where appropriate, the research plan makes adequate provisions for monitoring the data collected to ensure the safety of the subjects.
- Where appropriate, there are adequate provisions to protect the privacy of subjects and to maintain the confidentiality of all data.
- Appropriate additional safeguards have been included to protect vulnerable subjects.
- Any unanticipated, serious, or continuing problems encountered regarding risks to subjects must be reported immediately, but not later than 10 days following the event. This should be reported to the IRB Office via the “Adverse Effect Report Form”.
- If approved, the maximum period of approval is limited to twelve months. Projects that exceed this period must submit an application for renewal or continuation.

PROTOCOL NUMBER: **11121501**
PROJECT TITLE**: Impact of Training on Acquisition and Maintenance**
PROJECT TYPE**: Dissertation**
RESEARCHER/S**: Kimberly Zoder-Martell**
COLLEGE/DIVISION**: College of Education & Psychology**
DEPARTMENT: **School Psychology**
FUNDING AGENCY: **N/A**
IRB COMMITTEE ACTION**: Expedited Review Approval**
PERIOD OF PROJECT APPROVAL: **12/15/2011 to 12/14/2012**

**Lawrence A. Hosman, Ph.D.**
**Institutional Review Board Chair**

# APPENDIX B

## CONSENT FORM

## THE UNIVERSITY OF SOUTHERN MISSISSIPPI

**Purpose**
You are being asked to participate in a study that is evaluating the effects of a training strategy to increase correct implementation of an intervention that is geared to improve the quality of life for the individuals who you support. This study is important because it will evaluate the effectiveness of an efficient strategy to train Direct Care Staff to implement interventions.

**Participation:**
You are being asked to participate because you support individuals during mealtime and work with an individual who may benefit from increased support.

**Procedure:**
If you agree to participate in this study, you will be trained to implement an intervention with an individual during mealtime (i.e., breakfast, lunch, or dinner). I will train you to implement the intervention during mealtimes. Training will include the use of a one-way radio, of which I will demonstrate proper use. This device will allow me to communicate with you from a distance while you work. The interventions that you will be asked to implement will be part of the individual's Behavior Support Plan (BSP), and should not interfere with your regularly scheduled activities. You will also be asked to complete three brief surveys that will ask you questions about your job satisfaction, the intervention that you were trained to used, and information about the individual's challenging mealtime behaviors.

**Benefits/Risks to Participant:**
As a result of the intervention, the individual who you are paired with may decrease challenging mealtime behaviors. Additionally, you may learn new skills to help address challenging behaviors. Finally, if you complete this study, your name will be entered into a raffle to win a $25.00 gift card. You may withdraw your name from the raffle if you would not like to be considered for the prize. You will have a 25% chance of winning the raffle, should all participants choose to enter. The potential risks associated with participation are thought to be minimal. You may not like using the one-way radio. Some people find the one-way radio to be distracting. Additionally, there is a chance that the intervention will increase inappropriate mealtime behaviors of the individual who you support.

**Voluntary Nature of the Study/Confidentiality:**
Your participation in this study is entirely voluntary and you may refuse to complete the study at any point during the experiment without any impact on your current job security. Whether or not you participate will not influence your position at your current agency. Additionally, data from this study will not be used to complete your employee evaluation

or make decisions regarding your job stability. All information obtained during the study will be kept confidential. All information that may identify you will be withheld. Your name and other identifying information will not be used in the research papers, any submission to a professional journal for publication, or presentations. The only circumstances in which we would release information about you would be if there is a threat of harm to self or others, abuse, if the release of information is court ordered, or if there is a medical emergency in which release of information is important for someone's safety.

**Contacts and Questions:**
At any time, you may withdraw from the study or ask any questions you may have regarding this study. Questions concerning the research should be directed to Kimberly Zoder-Martell (Ext. 2138; kimberly.martell@la.gov) or Dr. Brad Dufrene at (601-266-5255; brad.dufrene@usm.edu). This project has been reviewed by the Human Subjects Protection Review Committee, which ensures that research projects involving human subjects follow federal regulations. Any questions or concerns about rights as a research subject should be directed to the chair of the Institutional Review Board, The University of Southern Mississippi, 118 College Drive #5147, Hattiesburg, MS 39406-0001, (601) 266-6820. A copy of this form will be given to the participant.

| | |
|---|---|
| Kimberly Martell, M.A. | Brad Dufrene, Ph.D. |
| School Psychologist-in-Training | Director of Dissertation |

---

*This Section to be Completed by Direct Care Staff*

**Participant Consent:**
I have had the purposes and procedures of this study explained to me and have had the opportunity to ask questions. My questions have been answered to my satisfaction, and I am voluntarily signing this form to participate in this research study. My signature shows my willingness to participate in this study under the conditions stated.

| | |
|---|---|
| *Name of Direct Care Staff* | *Date* |

# APPENDIX C

## MODIFIED INTERVENTION RATING PROFILE-15

Please respond to each of the following statements thinking about the intervention you read/were recommended. Please then circle the number associated with your response. Be sure to answer all statements.

| | **Strongly Disagree** | **Disagree** | **Slightly Disagree** | **Slightly Agree** | **Agree** | **Strongly Agree** |
|---|---|---|---|---|---|---|
| **This would be an acceptable intervention for the individual's mealtime behavior concerns.** | **1** | **2** | **3** | **4** | **5** | **6** |
| **Most direct care staff would find this intervention appropriate for mealtimes** | **1** | **2** | **3** | **4** | **5** | **6** |
| **This intervention should prove effective in helping to improve the individual's mealtime behavior concerns** | **1** | **2** | **3** | **4** | **5** | **6** |
| **I would suggest the use of this intervention to other direct care staff** | **1** | **2** | **3** | **4** | **5** | **6** |
| **The individual's mealtime behaviors are severe enough to warrant the use of this intervention.** | **1** | **2** | **3** | **4** | **5** | **6** |
| **Most direct care staff would find this procedure suitable for mealtime behavior concerns** | **1** | **2** | **3** | **4** | **5** | **6** |
| **I would be willing to use this intervention during mealtimes.** | **1** | **2** | **3** | **4** | **5** | **6** |
| **This intervention would *not* result in negative side effects for the individual.** | **1** | **2** | **3** | **4** | **5** | **6** |
| **This intervention would be appropriate for a variety of individuals.** | **1** | **2** | **3** | **4** | **5** | **6** |

| | | | | | | |
|---|---|---|---|---|---|---|
| **This intervention is consistent with those I have used.** | **1** | **2** | **3** | **4** | **5** | **6** |
| **The intervention is a fair way to handle the individual's mealtime behavior concerns.** | **1** | **2** | **3** | **4** | **5** | **6** |
| **This intervention is reasonable for the mealtime behaviors described.** | **1** | **2** | **3** | **4** | **5** | **6** |
| **I liked the procedures used in this intervention.** | **1** | **2** | **3** | **4** | **5** | **6** |
| **This intervention was a good way to handle this individual's mealtime behavior.** | **1** | **2** | **3** | **4** | **5** | **6** |
| **Overall, this intervention would be beneficial to this individual.** | **1** | **2** | **3** | **4** | **5** | **6** |

# APPENDIX D

## JOB SATISFACTION SURVEY

| | | |
|---|---|---|
| | **JOB SATISFACTION SURVEY**<br>Paul E. Spector<br>Department of Psychology<br>University of South Florida<br> | |
| | PLEASE CIRCLE THE ONE NUMBER FOR EACH QUESTION THAT COMES CLOSEST TO REFLECTING YOUR OPINION ABOUT IT. | Disagree very much / Disagree moderately / Disagree slightly / Agree slightly / Agree moderately / Agree very much |
| 1 | I feel I am being paid a fair amount for the work I do. | 1 2 3 4 5 6 |
| 2 | There is really too little chance for promotion on my job. | 1 2 3 4 5 6 |
| 3 | My supervisor is quite competent in doing his/her job. | 1 2 3 4 5 6 |
| 4 | I am not satisfied with the benefits I receive. | 1 2 3 4 5 6 |
| 5 | When I do a good job, I receive the recognition for it that I should receive. | 1 2 3 4 5 6 |
| 6 | Many of our rules and procedures make doing a good job difficult. | 1 2 3 4 5 6 |
| 7 | I like the people I work with. | 1 2 3 4 5 6 |
| 8 | I sometimes feel my job is meaningless. | 1 2 3 4 5 6 |
| 9 | Communications seem good within this organization. | 1 2 3 4 5 6 |
| 10 | Raises are too few and far between. | 1 2 3 4 5 6 |
| 11 | Those who do well on the job stand a fair chance of being promoted. | 1 2 3 4 5 6 |
| 12 | My supervisor is unfair to me. | 1 2 3 4 5 6 |
| 13 | The benefits we receive are as good as most other organizations offer. | 1 2 3 4 5 6 |
| 14 | I do not feel that the work I do is appreciated. | 1 2 3 4 5 6 |
| 15 | My efforts to do a good job are seldom blocked by red tape. | 1 2 3 4 5 6 |
| 16 | I find I have to work harder at my job because of the incompetence of people I work with. | 1 2 3 4 5 6 |
| 17 | I like doing the things I do at work. | 1 2 3 4 5 6 |

| | PLEASE CIRCLE THE ONE NUMBER FOR EACH QUESTION THAT COMES CLOSEST TO REFLECTING YOUR OPINION ABOUT IT.  | Disagree very mcuh 1 · Disagree moderately 2 · Disagree slightly 3 · Agree slightly 4 · Agree moderately 5 · Agree very much 6 |
|---|---|---|
| 18 | The goals of this organization are not clear to me. | 1 2 3 4 5 6 |
| 19 | I feel unappreciated by the organization when I think about what they pay me. | 1 2 3 4 5 6 |
| 20 | People get ahead as fast here as they do in other places. | 1 2 3 4 5 6 |
| 21 | My supervisor shows too little interest in the feelings of subordinates. | 1 2 3 4 5 6 |
| 22 | The benefit package we have is equitable. | 1 2 3 4 5 6 |
| 23 | There are few rewards for those who work here. | 1 2 3 4 5 6 |
| 24 | I have too much to do at work. | 1 2 3 4 5 6 |
| 25 | I enjoy my coworkers. | 1 2 3 4 5 6 |
| 26 | I often feel that I do not know what is going on with the organization. | 1 2 3 4 5 6 |
| 27 | I feel a sense of pride in doing my job. | 1 2 3 4 5 6 |
| 28 | I feel satisfied with my chances for salary increases. | 1 2 3 4 5 6 |
| 29 | There are benefits we do not have which we should have. | 1 2 3 4 5 6 |
| 30 | I like my supervisor. | 1 2 3 4 5 6 |
| 31 | I have too much paperwork. | 1 2 3 4 5 6 |
| 32 | I don't feel my efforts are rewarded the way they should be. | 1 2 3 4 5 6 |
| 33 | I am satisfied with my chances for promotion. | 1 2 3 4 5 6 |
| 34 | There is too much bickering and fighting at work. | 1 2 3 4 5 6 |
| 35 | My job is enjoyable. | 1 2 3 4 5 6 |
| 36 | Work assignments are not fully explained. | 1 2 3 4 5 6 |

# APPENDIX E

## SCREENING TOOL OF FEEDING PROBLEMS (STEP)

1. He/she cannot feed him/herself independently.

2. Problem behaviors (e.g., aggression, self-injury, property destruction) increase during mealtime.

3. He/she does not demonstrate the ability to chew.

4. He/she chokes on food.

5. He/she does not demonstrate the ability to swallow.

6. He/she will only eat selected types of food (e.g., pudding, rice).

7. He/she steals or attempts to steal food from others during meals.

8. He/she requires special equipment for feeding (e.g., G-tubes, scoop dishes).

9. He/she eats or attempts to eat items that are not food.

10. He/she prefers a certain setting for eating (e.g., dining room).

11. He/she only eats a small amount of food presented to him/her.

12. He/she will continue to eat as long as food is available.

13. He/she spits out their food before swallowing.

14. He/she steals or attempts to steal food outside of mealtime.

15. He/she eats a large amount of food in a short period of time.

16. He/she requires special positioning during feeding.

17. He/she swallows without chewing sufficiently.

18. He/she regurgitates and re-swallows food either during or immediately following meals.

19. He/she pushes food away or attempts to leave the area when food is presented.

20. He/she will only eat foods of a certain temperature.

21. He/she vomits either during or immediately following meals.

22. He/she prefers to be fed by a specific caregiver, or prefers to be fed rather than to feed him/herself.

23. He/she eats foods of only certain textures.

# APPENDIX F

## OBSERVATION FORM

DCS:_____ IOA:_____

Phase: Baseline DT M FU

| | Staff 1 Bxs | | | | | Resident Bxs | | | | | Staff 1 Bxs | | | | | Resident Bxs | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PV | N | Neg | PP | NP | Px1 | Px2 | Px3 | PV | | PV | N | Neg | PP | NP | Px1 | Px2 | Px3 | PV |
| 1.1 | | | | | | | | | | 11.1 | | | | | | | | | |
| 1.2 | | | | | | | | | | 11.2 | | | | | | | | | |
| 1.3 | | | | | | | | | | 11.3 | | | | | | | | | |
| 1.4 | | | | | | | | | | 11.4 | | | | | | | | | |
| 1.5 | | | | | | | | | | 11.5 | | | | | | | | | |
| 1.6 | | | | | | | | | | 11.6 | | | | | | | | | |
| 2.1 | | | | | | | | | | 12.1 | | | | | | | | | |
| 2.2 | | | | | | | | | | 12.2 | | | | | | | | | |
| 2.3 | | | | | | | | | | 12.3 | | | | | | | | | |
| 2.4 | | | | | | | | | | 12.4 | | | | | | | | | |
| 2.5 | | | | | | | | | | 12.5 | | | | | | | | | |
| 2.6 | | | | | | | | | | 12.6 | | | | | | | | | |
| 3.1 | | | | | | | | | | 13.1 | | | | | | | | | |
| 3.2 | | | | | | | | | | 13.2 | | | | | | | | | |
| 3.3 | | | | | | | | | | 13.3 | | | | | | | | | |
| 3.4 | | | | | | | | | | 13.4 | | | | | | | | | |
| 3.5 | | | | | | | | | | 13.5 | | | | | | | | | |
| 3.6 | | | | | | | | | | 13.6 | | | | | | | | | |
| 4.1 | | | | | | | | | | 14.1 | | | | | | | | | |
| 4.2 | | | | | | | | | | 14.2 | | | | | | | | | |
| 4.3 | | | | | | | | | | 14.3 | | | | | | | | | |
| 4.4 | | | | | | | | | | 14.4 | | | | | | | | | |
| 4.5 | | | | | | | | | | 14.5 | | | | | | | | | |
| 4.6 | | | | | | | | | | 14.6 | | | | | | | | | |
| 5.1 | | | | | | | | | | 15.1 | | | | | | | | | |
| 5.2 | | | | | | | | | | 15.2 | | | | | | | | | |
| 5.3 | | | | | | | | | | 15.3 | | | | | | | | | |
| 5.4 | | | | | | | | | | 15.4 | | | | | | | | | |
| 5.5 | | | | | | | | | | 15.5 | | | | | | | | | |
| 5.6 | | | | | | | | | | 15.6 | | | | | | | | | |
| 6.1 | | | | | | | | | | 16.1 | | | | | | | | | |
| 6.2 | | | | | | | | | | 16.2 | | | | | | | | | |
| 6.3 | | | | | | | | | | 16.3 | | | | | | | | | |
| 6.4 | | | | | | | | | | 16.4 | | | | | | | | | |
| 6.5 | | | | | | | | | | 16.5 | | | | | | | | | |
| 6.6 | | | | | | | | | | 16.6 | | | | | | | | | |
| 7.1 | | | | | | | | | | 17.1 | | | | | | | | | |
| 7.2 | | | | | | | | | | 17.2 | | | | | | | | | |
| 7.3 | | | | | | | | | | 17.3 | | | | | | | | | |
| 7.4 | | | | | | | | | | 17.4 | | | | | | | | | |
| 7.5 | | | | | | | | | | 17.5 | | | | | | | | | |
| 7.6 | | | | | | | | | | 17.6 | | | | | | | | | |
| 8.1 | | | | | | | | | | 18.1 | | | | | | | | | |
| 8.2 | | | | | | | | | | 18.2 | | | | | | | | | |
| 8.3 | | | | | | | | | | 18.3 | | | | | | | | | |
| 8.4 | | | | | | | | | | 18.4 | | | | | | | | | |
| 8.5 | | | | | | | | | | 18.5 | | | | | | | | | |
| 8.6 | | | | | | | | | | 18.6 | | | | | | | | | |
| 9.1 | | | | | | | | | | 19.1 | | | | | | | | | |
| 9.2 | | | | | | | | | | 19.2 | | | | | | | | | |
| 9.3 | | | | | | | | | | 19.3 | | | | | | | | | |
| 9.4 | | | | | | | | | | 19.4 | | | | | | | | | |
| 9.5 | | | | | | | | | | 19.5 | | | | | | | | | |
| 9.6 | | | | | | | | | | 19.6 | | | | | | | | | |
| 10.1 | | | | | | | | | | 20.1 | | | | | | | | | |
| 10.2 | | | | | | | | | | 20.2 | | | | | | | | | |
| 10.3 | | | | | | | | | | 20.3 | | | | | | | | | |
| 10.4 | | | | | | | | | | 20.4 | | | | | | | | | |
| 10.5 | | | | | | | | | | 20.5 | | | | | | | | | |
| 10.6 | | | | | | | | | | 20.6 | | | | | | | | | |

| Staff Bx: |
|---|
| PV: Positive Verbal Interactions |
| N: Neutral verbal Interactions |
| Neg: Negative Verbal Interactions |
| PP: Positive Physical Interactions |
| NP: Negative Physical Interactions |

| Resident Bxs: |
|---|
| Px1:_____ |
| Px2:_____ |
| Px3:_____ |
| Px4:_____ |
| PV: Positve Verbal Interaction |

# APPENDIX G

## PROCEDURAL FIDELITY

Date:_____ Session: B DT M FU
DCS:_____ Observer:_____
% of steps accurately completed: _____

| **Task** | **Was the task completed?** | |
|---|---|---|
| | Yes | No |
| 1. The experimenter gave the receiver to the DCS | | |
| 2. The experimenter reminded the DCS to repeat prompts word for word | | |
| 3. The experimenter prompted the DCS to initiate an interaction with the resident every 2 minutes | | |

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